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EARL C. ELKINS, M.D.

Rochester, Minnesota

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The Reduction of Man Power Loss from Gonorrhreal Urethritis by the Early Application of Chemo-Fever Therapy. Lt. Comdr. Kenneth Phillips (M.C.), U. S. N. R., and Ensign Alice B. Mundorff (N.C.), U. S. N. R.

Renal Complications in Combined Sulfathiazol-Fever Therapy. Arthur Pruce, 1st Lt., M.C., Chief, Physical Therapy Section, Stark General Hospital, Charleston, N. C.

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Modern Hydrotherapy. II. A Review of Recent Developments. Hans J. Behrend, M.D., Lecturer, Physical Therapy, School of Education, New York University; Associate, Physical Therapy, Hospital for Joint Diseases, New York, N. Y.

Rehabilitation of Arthrogryposis Multiplexa Congenita. Carl Egbert Badgley, M.D., Professor of Surgery in Charge of Orthopedic Surgery, University of Michigan Medical School, Ann Arbor, Michigan.

Management and Care of Infantile Paralysis Patients. Edward Lyon Compere, M.D., Associate Professor, Northwestern University Medical School; Attending Orthopaedic Surgeon and Chairman of the Department of Orthopaedic Surgery, Wesley Memorial Hospital, Chicago.

The Interpretation and Clinical Significance of Calorimetric and Skin Temperature Measurements of the Extremities. Charles Sheard, Ph.D., Professor of Biophysics, Mayo Foundation, University of Minnesota and Director of Division of Physics and Biophysical Research, The Mayo Clinic, Rochester, Minn.; Grace M. Roth, Ph.D., Instructor in Physiology, Mayo Foundation, University of Minnesota and Associate in Clinical Physiology, The Mayo Clinic, Rochester, Minn., and Edgar V. Allen, M.D., Associate Professor of Medicine, Mayo Foundation, University of Minnesota and Head of Section of Medicine, The Mayo Clinic, Rochester, Minn.

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Presidential Address

PHYSICAL THERAPY IN WAR TIMES *

KRISTIAN G. HANSSON, M.D.

NEW YORK, N. Y.

A discussion of physical therapy in war times must include both world wars, the rehabilitation after the war and our care of civilian patients.

The first proposal concerning the work which was later to become the function of the Reconstruction Service was offered as a part of the plan for the organization and development of the orthopedic department in the Surgeon General's office. It provided for a physical therapy department and curative workshop in each orthopedic hospital. This proposal was made in a letter from Major E. G. Brackett, M. R. C., and Major J. E. Goldthwait, M. R. C., to Major General Gorgas on Aug. 14, 1917. As a result, the Surgeon General submitted a tentative plan to the Secretary of War on Nov. 7, 1917. This included plans for a standard physical therapy unit for base and general hospitals of the United States Army. It provided for hydrotherapy, mechanotherapy, electrotherapy and a gymnasium. A medical officer was appointed a chief of the section of physical therapy on November 15, and he organized the selection of personnel and the standardization of equipment. By May, 1919, we had 45 hospitals with physical therapy with 56 commissioned officers in charge, 700 physiotherapy aides and 54 enlisted men.

The type of physical therapy done in these various hospitals followed various patterns. The orthopedic surgeons emphasized massage and exercise; the neurosurgeons, electrotherapy, and the psychiatrists, hydrotherapy. Parallel to this development in the United States, we also saw physical therapy following the A. E. F. overseas. The first physical therapy aides to reach France were 22 aides attached to Base Hospital 114, which had been organized primarily as an orthopedic hospital unit. In August, 1918, General Pershing recommended to the War Department that 20 reconstruction aides—10 physical therapy aides and 10 occupational therapy aides—accompany each base hospital sent overseas. By the end of December, 1918, there were 200 aides in France, distributed among 20 base hospitals. In 1919, most of the physical therapy work was largely concentrated at Bordeaux and Savenay. The last aides sailed from France for the United States late in May, 1919. This was the birth of modern physical therapy as we know it. Most of us meeting here today have been connected with the development of physical therapy during the peace between World War I and World War II.

Major Granger directed the postwar activities of physical therapy from the Surgeon General's office, and we are all familiar with the work of Drs. Hirsch, Sampson, Woodbury, Stewart, Brooks, Titus, Kovács and others. Their work was the foundation of the reconstruction period.

A review of the accomplishments in physical therapy from 1919 to 1939 can be summarized as follows:

1. The establishment of a Council of Physical Therapy of the American Medical Association in 1925. This Council controls the ethical development of physical therapy as a part of organized medicine. It accepts or rejects new apparatus and is helpful in physical therapy education and research.

2. The American Congress of Physical Therapy that is assembled here tonight in its 22d convention was started in 1921. It counts among its members most of the

* Presidential Address Delivered at the Twenty-second Annual Session of the American Congress of Physical Therapy, Chicago, September 8, 1943.

physicians in the United States who are interested in physical therapy in all its aspects. By means of annual conventions with scientific programs, commercial exhibits and seminars, a healthy development is secured. The educational program of technicians owes much to the Registry Board of the Congress. Through its monthly publication—the ARCHIVES OF PHYSICAL THERAPY—it influences the medical literature of today.

3. The American Physiotherapy Association is the national organization of physical therapy technicians. It is a dynamic force, safeguarding the interests of technicians, conservative in its ethics and progressive in its development. The Association's publication, *The Physiotherapy Review*, is an excellent technical journal.

Thanks to these organizations, we were better prepared to meet the demand when the second world war started.

Long before the United States entered the war, the Surgeons General of the Army and Navy met with the subcommittee on physical therapy of the National Research Council. This committee, together with the council, prepared a manual of physical therapy which included equipment. The training and number of medical officers and technicians were discussed. Two years ago, the Surgeon General's office was advised of the need for more technicians, and the prediction has come true today. The Surgeon General laid down certain rules about medical officers in charge of the physical therapy department in each general hospital with at least six aides. These aides were commissioned by act of Congress in February, 1943. War emergency courses were started in both military and civilian hospitals. Certain medical officers were sent for physical therapy training. In a letter from the Surgeon General's office on Aug. 3, 1943, there appears the following statement: "General and larger station hospitals in the continental United States will be provided with gymnasium apparatus, standard equipment for electrotherapy, hydrotherapy and thermotherapy and equipment for research." He also indicates that there is a tendency to decentralization of the medical control from Washington to the various service commands. A plan is also under consideration to centralize certain types of cases in specialized hospitals. Another sign of decentralization is that physical therapy aides are now asked to apply to the local procurement and assignment office instead of to Washington.

In order to get some information on how the plan from Washington worked out, I have contacted various service commands. I have been in correspondence with physical therapy departments from Alaska to the Panama Canal Zone, in Australia and North Africa, from Massachusetts to California, Lake Geneva and Texas, in Georgia, Tennessee and Utah—and others. After reading over the letters several times, I have attempted to crystallize my impressions as follows:

Army. — The efficiency of the Army physical therapy departments and equipment depends a great deal on the commanding officer of the service command. Most of the departments come under surgery, although such hospitals as the Army and Navy Hospitals, Hot Springs, Ark., are on the medical service. The medical officer in charge often directs fever and occupational therapy also. The medical officer in charge of the physical therapy section is usually a lieutenant or captain. Very few hospitals are fortunate enough to have medical officers with previous training in physical therapy. Some have been given a three month training course. Dr. Krusen at Mayo Clinic has trained most of them.

The 8th service command reports that they have physical therapy section officers in 10 general hospitals, 16 station hospitals and 3 large air force hospitals. These medical officers are liaison officers to the general surgical, orthopedic or neurosurgical services. They make rounds on the wards and see all referred patients, prescribe the treatments, personally conduct electro-diagnosis, oscillographic and skin temperature tests. They are also responsible for the fever patients. Careful progress notes of each patient are kept. In

most of the larger hospitals much training is in progress. When new officers are assigned they are indoctrinated by the officer in charge. Lectures and demonstrations are given to new apprentice aides, fever nurses, student aides in occupational therapy and corpsmen. More than twenty members of this Congress are section officers of physical therapy in the Army. My impression of these medical officers is that they are enthusiastic in the building up of their departments and are anxious to render the best possible service to the patients. The personnel under the section officer consists of a head physical therapy aide with a commission as first lieutenant and several physiotherapy aides as second lieutenants. Major Emma Vogel of Walter Reed Hospital is in charge of the physical therapy aides. Owing to the lack of trained technicians, most hospitals have enlisted men or corpsmen with more or less training. It is a pleasure to state that all these trained corpsmen are highly thought of by their medical officers in all the hospitals I have contacted. The administration of the functions of the physical therapy personnel follows the basic military organization. This leads to efficiency, integrity and the best possible care of our casualties.

The equipment found varies a great deal. At Ashford General Hospital, there is the best equipment that money can buy. On the other hand, Captain Marjey writes me from Alaska that he started his department with one small heat lamp. However, he ended up with a physical therapy ward and a complete department. In general terms we find about the same equipment as in our civilian hospitals. I believe high frequency machines are less in use and whirlpools are most popular. As was expected, some delay has occurred in obtaining equipment, but this is being remedied as quickly as possible.

All hospitals report increasing demands for the use of physical therapy. The chief of the orthopedic section at Lawson General Hospital reports 10,056 physical therapy treatments given in July, 1943. The types of patients treated are those with the usual musculoskeletal injuries seen in civilian life: back injuries, painful feet, knee injuries, strains, sprains and dislocations, together with fractures, burns, etc. However, as combat casualties are arriving there is an increase in fractures, nerve injuries and burns, shrapnel wounds of the soft tissue and amputations. So far the treatments are not standardized, but I believe we shall soon have general directions laid down for various after-treatments. A recent circular letter from the War Department takes up in detail the subject of physical therapy in the after-treatment of amputations. This letter emphasizes the following purposes: (1) to toughen the stump; (2) to improve collateral circulation; (3) to reduce edema; (4) to obtain normal strength in all muscles above the amputation, and (6) to prevent or break up adhesions in the suture line.

The opinion in the Army about physical therapy is expressed in a letter from the surgical consultant of the 8th service command. I quote:

It is my opinion from close observation of the work of the physical therapy departments in all of the hospitals of this service command that they are satisfactorily filling an essential need and materially reducing the period of disability and increasing the completeness with which function is restored; that the qualifications of the physical therapy aides are, in general, of a high order; that the steady return to this country of battle casualties in increasing numbers will constitute a need for more well trained physical therapy aides and that this need will continue for a long time.

Navy. — The Surgeon General's office of the Navy had the benefit of Captain Stephenson's experience in physical therapy. He had once been in charge of physical therapy in the United States Naval Hospital in Brooklyn. He visited many naval hospitals in England in 1941 and has some very definite ideas on physical therapy. Most of our Naval Hospitals such as the ones at Brooklyn, Philadelphia, Washington, Oakland, Calif., and Mare

Island, Calif., are well organized and well equipped. The department at Oakland covers 8,000 square feet and can take care of 250 patients daily. It has two medical officers in charge, 4 nurse-technicians and 20 technicians. As in the Army there is a lack of medical officers trained in physical therapy and much need of technicians. Although the Navy admits some women technicians, through the WAVE training centers, most of the technical work is done by medical corpsmen called technologists. The Bureau of Medicine and Surgery issued in 1942 a curriculum for the training of these corpsmen. It calls for 100 didactic lecture hours and 640 practical, or clinical hours. The course is divided into mechanotherapy, hydrotherapy, light and electrotherapy and massage. These courses are given in the naval hospitals. They also conduct a course in fever therapy.

I believe it is safe to say that physical therapy is well established in both Army and Navy hospitals and that more trained personnel and equipment are needed. No new treatments have been evolved that we are not familiar with in the civilian hospitals. Fever treatments are extensively used for gonorrheal infections and cerebral syphilis. The introduction of penicillin will undoubtedly cut down the use of fever in gonorrhea. In some military hospitals where there are great numbers of men with similar injuries, exercise squads for low back pain, weak feet and strained knees, etc., have been instituted, sometimes on the wards. The treatments in the military hospitals are given every day, often including Sunday. With the complete control exercised over military patients, we should expect some interesting statistics about the efficacy of physical therapy in various pathologies.

The reports on physical therapy in combat zones are interesting. We have all read Captain Solomon's letters from Australia, where he improvised a department by training his own corpsmen and manufacturing his own equipment. I have a letter from a station in North Africa where 3 aides treat 80 patients daily. They use heat lamps and bridges, ultraviolet lamps, galvanic faradic and sine wave currents. The injuries seen are, first, fractures and soft tissue wounds from shell fragments, and, second, nerve injuries, third degree burns, postoperative knee cartilages and contusions. They get their patients early and are very optimistic over their results. Muscle spasm accompanying burns or trauma they relieve by hot wet packs. Those patients who cannot return to active service are transferred to military hospitals in the United States. Returning troop ships are provided with 2 physical therapy aides and a room equipped with some apparatus.

Rehabilitation

In addition to our care of immediate war casualties, we must also prepare for a rehabilitation program. This is the planned attempt, through the use of all recognized measures, under skilled direction, to restore those persons who, because of disabilities, do not assume to the greatest possible extent and at the earliest possible time that place in the production stream of society which they are potentially capable of assuming. A Council of Rehabilitation has been formed by 38 organizations interested in this undertaking. Physical therapy plays an important part in this program.

Civilian Physical Therapy

In wartime, we expect the civilians to sacrifice much for the general war effort. Hospital and private practice has lost a high percentage of medical staff, including technicians. The number of civilian patients has not decreased. This applies to physical therapy as well as to every other specialty. Possibly even more so, if we consider the new development in the treatment in poliomyelitis. This treatment is carried out nearly entirely by the physical therapy profession. It is a costly treatment both in money

and in personnel required. I have heard of no closing of physical therapy departments in civilian hospitals because of the war. I believe it is our duty to guarantee the civilian population adequate medical care even if our efforts have to be doubled.

Conclusion

What effect will the war have on physical therapy? We shall have great numbers of men who have been receiving physical therapy in the armed forces. They will expect the same efficiency when they return to civilian life. The number of medical officers trained in physical therapy will be greatly increased, and many of them will continue in physical therapy after the war. Thousands of physical therapy aides will be available when the war ends, some well trained and some only partially trained.

These are only a few of the problems that offer a challenge to the American Congress of Physical Therapy. I propose that we start now to consider these future problems, so that we shall be prepared to meet them when peace has come.

SOME IMPRESSIONS OF PHYSICAL AND OCCUPATIONAL THERAPY IN MIDDLE AND FAR WEST UNIVERSITIES

DR. ERNEST J. JAQUA

Director, Professional and Technical Division
Bureau of Training, War Manpower Commission

Editor's Note: Dr. Ernest James Jaqua, the author of the following article, is a distinguished educator. He was born in Reinbeck, Iowa, on October 24, 1882 and after receiving the A.B. degree from Grinnell College in 1907, he received the M.A. degree from Columbia University in 1910, the B.D. degree from Union Theological Seminary in 1912, and the Ph.D. degree from Harvard University in 1919. In 1927 he received an honorary LL.D. degree from Grinnell College in Iowa. He has served as College Secretary of the State Y. M. C. A. of Indiana, as Dean of Men and Assistant to the President of Colorado College, as Dean of Faculty and Professor of Education at Pomona College, and has been President of Scripps College, Claremont, California, since 1927. As his contribution to the war effort, he has rendered distinguished service as Director of the Professional and Technical Division of the Bureau of Training of the War Manpower Commission. It is extremely gratifying to find that Dr. Jaqua, observing the developments in physical and occupational therapy from an unbiased standpoint, has reached the decisions which he makes in this article. Physicians interested in physical rehabilitation will be very happy, we believe, to read the pointed, final conclusions reached by Dr. Jaqua in the last paragraph of this report.

Certain State and private universities, have the advantage of geographical proximity for all aspects of collegiate and technical training required by physical and occupational therapy technicians — the medical school and hospital occupying contiguous campuses with the liberal arts college. This is a great advantage particularly for occupational therapy where medical and clinical courses must go hand in hand with training in arts and crafts.

Hearty cooperation between the liberal arts and medical faculties is essential for complete success of a program of training in these fields. Whenever possible the two courses of study should be under joint administration since the first year of technical training can be practically identical. There is much overlapping in actual operation.

The general supervision of the training program can best be entrusted to the medical school, since all courses of study must be approved by the American Medical Association, or to a joint committee of the medical and

arts faculties, the former providing the chairman. It is important to recognize the dominant medical implications from the outset.

The chief difficulty in establishing strong new schools of physical and occupational therapy at this time is the scarcity of qualified teachers. In the case of physical therapy this means doctors who have specialized in this field in medical school and have been directors of physical therapy departments in hospitals. These men are few and many of the best ones are now in the Army. As for occupational therapy teachers, they too are scarce and military hospitals are engaging them as rapidly as possible to direct newly established departments.

The founding of several new schools of physical and occupational therapy in state universities under experienced joint leadership, where both medical and arts courses and hospital facilities are immediately available will have the double effect of giving added professional standing to these rapidly developing medical fields and at the same time discouraging the establishment of departments in institutions lacking medical affiliations.

Meanwhile liberal arts colleges should plan pre-technical courses such as arts and crafts, science, and psychology, thus preparing some of their ablest students for advanced courses in the biological sciences, clinical subjects and clinical experience in institutions having approved schools.

While the generous and far sighted contribution of scholarships and loans by the W. K. Kellogg Foundation to institutions offering courses in medical technology, physical and occupational therapy is deeply appreciated and will yield excellent results, it only emphasizes the need of government subvention on a national scale if a sufficient number of technicians are to be trained to meet the emergency demands of war. The fact is that in spite of renewed efforts on the part of the older approved schools and the newly established schools, the unprecedented demand for trained personnel to meet the growing demands of military and veterans and civilian hospitals will be only partially met.

Americans have a strange incapacity for predicting and planning emergencies. They wait until a crisis is on them, depending on their ingenuity and amazing resources to pull them through. In the words of a famous President, Americans do not learn by experience, they learn by catastrophe.

Perhaps the deepest impression gained from this survey of physical and occupational therapy schools is one of admiration for the splendid pioneer work of the older schools in the face of half hearted appreciation and support by the medical profession generally, and only the vaguest knowledge of their importance on the part of the lay public. The first approved schools have steadily raised their professional standing, extended the range and quality of their courses of study (especially in medical subjects) and proved beyond all doubt the indispensable nature of their services to the medical profession. Indeed thoughtful observers are deeply convinced, and the war will drive home this point with increasing poignancy, that the medical school or hospital which does not now take active measures to provide these services will some day be awakened to the fact that certain features of the magnificent procession of health have moved past while they were unaware of their presence or unmindful of their significance.



PHYSICAL FEVERS AND SYPHILIS

LIEUTENANT COMMANDER FREDERICK A. LOWE *

Medical Corps

UNITED STATES NAVAL RESERVE

Physical fevers hark back to antiquity. An account in our own country recorded more than a century ago is so interesting that I should like to present portions of it; it is quoted by Jones¹ from the diary of William Clark, a layman, of the Lewis and Clark expedition over the Rocky Mountains to the Pacific Ocean.

On one of the men [of our expedition] we have ventured an experiment of a very robust nature. He has been sick for some time, but has now recovered his flesh, eats heartily and digests well, but has so great a weakness in his loins that he cannot walk nor even sit upright without extreme pain. . . . One of our [Indian] hunters mentioned that he had known persons in similar situations restored by violent sweats, and at the request of the patient, we permitted the remedy to be applied. For this purpose, a hole about four feet deep and three feet in diameter was dug in the earth, and heated well by a large fire at the bottom of it. The fire was then taken out, and an arch formed over the hole by means of willow poles and covered with several blankets, so as to make a perfect awning. The patient being stripped naked was seated under this on a bench, with a piece of board for his feet, and with a jug of water we sprinkled the bottom and sides of the hole, so as to keep up as hot a steam as he could bear. After remaining twenty minutes in this situation he was taken out, immediately plunged twice into cold water, and brought back to the hole, where he resumed the vapor bath. During all this he drank copiously a strong infusion of horse-mint. At the end of three-quarters of an hour he was again withdrawn from the hole, carefully wrapped, and suffered to cool gradually.

This operation was performed yesterday, and this morning he walked about, and is nearly free from pain. . . .

About eleven o'clock a canoe arrived with three Indians, one of whom was a poor creature who had lost the use of his limbs, and for whose recovery the natives seemed very anxious, as he is a chief of considerable rank among them. He complains of no pain in any peculiar limb and therefore we think his disease can not be rheumatic. His limbs would have been more diminished if his disease had been a paralytic affection. . . . We found that he was too weak to sit up, or to be supported in the hole. . . . The Indians who accompanied the chief were so anxious to have the operation of sweating him performed under our inspection, that we determined to gratify them by making a second attempt. The hole was therefore enlarged, and the father of the chief went in with him, and held him in a proper position. The next morning he was able to use his arms and felt better than he had done for many months, and sat up the greater part of the day. The Indian chief is still rapidly recovering. We had intended to repeat the sweating today, but as the weather was cloudy with occasional rain we declined it. This operation though violent, seems highly efficacious: for our own man on whom the experiment was first made is recovering his strength very fast and the restoration of the chief is wonderful. He continued to improve, and on the following day, after a very violent sweating, he was able to move one of his legs and thighs and some of his toes, the fingers and arms being almost entirely restored to their former strength.

Syphilis of the Central Nervous System

Boak, Carpenter and Warren² in 1932 demonstrated that the thermal death point of *Treponema pallidum* in vitro is 42 C. (107.6 F.) maintained for one hour, 41 C. (105.8 F.) for two hours, 40 C. (104 F.) for three hours or 39 C. (102.2 F.) for five hours.

Bessemans and Thiry³ in 1933 demonstrated that in human tissues *treponema*

* The opinions and assertions contained herein are the private ones of the writers and are not to be considered as official or reflecting the views of the Navy Department or naval service at large. Work done as a student officer, under direction of Dr. F. H. Krusen, while on assignment at the Mayo Foundation, for instruction in Physical Medicine.

pallidum in primary and secondary syphilitic lesions can be rendered immotile and avirulent if the heat of the tissues is raised to 42 C. (107.6 F.) for one hour or 40 C. (104 F.) for two hours. Epstein⁴ in 1939 commented that it was our inability to raise the temperature of all the tissues of the body to the thermal death point of *T. pallidum* that probably accounted for the failure of artificial fever alone to cure early syphilis.

The Cooperative Clinic Group⁵ in 1940 made some interesting observations regarding malaria and artificial fever in the treatment of dementia paralytica. First, the earlier in its course the disease was treated, the more favorable were the results of therapy. Second, the chances of clinical remission were one out of two when the dementia paralytica was mild and one out of four in the intermediate stage, but when it was severe the remission rate was one in a hundred with malaria in contrast to one in ten with artificial fever.

Huntley⁶ in 1941 obtained some amazingly good results in a penal institution; all inmates who had positive Wassermann reaction of the blood and some who presented behavior problems had examinations of the spinal fluid; those whose reactions were positive were given a total of sixty-five to seventy hours of artificial fever at 106.4 to 107 F. at six hour sessions. Chemotherapy was used in conjunction with the fever therapy; 168 inmates completed treatment, of whom 140 were clinically well and had negative serologic reactions. The remaining 28 improved clinically but still had positive reactions. Thus he obtained a remission rate of 83 per cent and a clinical and serologic improvement rate of 100 per cent. He expressed the opinion that the same number of fever hours generally sufficed regardless of the duration of the infection (table 1).

TABLE 1.—*Results of Treatment in Comparison with Duration of Infection**

Since Primary	Percentage of Negative Reactions	Average Fever Hours Per Patient
0 to 5 years.....	91	69
5 to 10 years.....	88	70
10 to 15 years.....	61	65
15 to 20 years.....	76	68
Grand total	83.3	

* From Huntley, W. B.: Syphilis Treated with Fever Therapy in Penal Institutions, *Arch. Phys. Therapy* 22:667 (Nov.) 1941.

Phillips⁷ in 1941 presented a series of 20 cases of latent syphilis in which he was able to reverse the blood serologic reaction in only 4 and the spinal fluid in 6; all patients had had previous chemotherapy, which in 12 cases had been quite adequate; the final status at the end of an observation period of three to five years revealed that none of the group showed progression. Nine of the 12 patients with dementia paralytica still had complete remission, and the remaining 3 had partial remission. Two of the 6 tabetic patients maintained considerable improvement; the remaining 4 showed little improvement. The 2 whose condition was classed as tertiary gumma appeared fully recovered.

Ewalt and Ebaugh⁸ in 1941, after a careful five year comparative study involving 232 patients with dementia paralytica, obtained a remission or improvement of 69 per cent with artificial fever, as compared with a rate of 58 per cent with malaria; they further observed that patients who have physical contraindications to malaria may in many instances be safely treated with artificial fever. Hence, the use of malaria has been discontinued. Their present regimen consists of a total of thirty-six hours of fever, given in

twelve sessions of three hours each, with bodily temperatures maintained at 105.8 F.

Bennett and co-workers,⁹ in the treatment of all types of neurosyphilis from 1926 to 1931, obtained a remission rate of 12 per cent from chemotherapy alone; from 1931 through 1936, they obtained a remission rate of 42 per cent from malaria followed by chemotherapy; from 1934 through 1939, they obtained a remission rate of 57 per cent from the use of artificial fever combined with and followed by chemotherapy. Artificial fever therapy now has replaced malaria therapy in public and private hospitals of Nebraska.

Bromberg¹⁰ in 1939, in a series of 76 cases of neurosyphilis of all types, reported from 85 to 100 per cent improvement. Trautmann¹¹ in 1939 reported the records of 109 patients who had neurosyphilis of all types, the majority of whom had had adequate chemotherapy previously, with little or no benefit; improvement was noted in 71 per cent of those with dementia paralytica and in more than 71 per cent of those with other types of neurosyphilis.

Neymann¹² in 1938 reported an improvement rate of 63 per cent (46 per cent of the patients having had complete remissions) in 75 cases of dementia paralytica; he also reported improvement in a series of 8 cases of tabes.

Simpson, Kendell and Rose¹³ in 1942 reported on the treatment of 165 patients suffering from neurosyphilis. The technic of treatment in this series was to administer the arsenical drug (at that time mapharsen [the hemialcoholate of 3-amino 4-hydroxy phenylarsine oxide hydrochloride] in a dose of 0.06 Gm.) when the bodily temperature had reached 105 F. These workers noted that there was a protective function of the fever against anaphylactic phenomena in patients sensitive to the arsenical drugs. Just before each fever session 4 grains (0.26 Gm.) of bismuth salicylate was given intramuscularly. During the first six years of this study, ten sessions of fever, each of five hours, with bodily temperatures between 105 and 106 F., at weekly intervals for a total of fifty hours were used; this was followed by twenty weeks of concurrent bismuth and arsenical drugs given at weekly intervals. During the past four years, however, they have used twelve sessions of fever, each of three hours with bodily temperature of 105.8 F., giving a total of thirty-six hours. These shorter treatments may be given thrice weekly if desired and thus the course can be shortened to four weeks.

Their painstaking work is revealed in part by the following results: In this series of 165 patients who completed the treatment and who had all types of neurosyphilis, there was a remission rate of 63 per cent, and 16 per cent were improved, making a benefit rate of 79 per cent; 14 per cent did not improve, and in 7 per cent progression was noted. The reaction of the blood became negative in 41 per cent and less positive in 45 per cent, making a total of 86 per cent improvement; it was unchanged in 14 per cent. The reaction of the spinal fluid became negative in 42 per cent and less positive in 40 per cent, totaling 82 per cent improvement; it was unchanged in 18 per cent (table 2).

Kendell, Simpson and Rose¹⁴ made a further report in 1942, in which they again commented on the absence of anaphylactic reaction. At that time they had treated 1,376 patients with artificial fever. They reiterated their adherence to the rule of always discontinuing treatment in case of untoward reactions. They reported on 208 patients suffering from all types of neurosyphilis who had completed treatment (table 3). Remission was obtained in 52 per cent and improvement in 29 per cent, totaling 81 per cent; in 12 per cent the condition was not improved and in 6 per cent it progressed. The reaction of the blood became negative in 40 per cent and less positive

TABLE 2.—*Neurosyphilis: Response to Combined Artificial Fever Therapy and Chemotherapy**

Type of Neurosyphilis	Number Treated	Incom- plete cluded Follow- up Data	In- complete eluded Follow- up Analy- sis	Remis- sion proved	Im- provement pro- ved	Not Im- proved	Prog- ressed	Be- came Negative	Reaction of Blood Less Positive Un- changed	Be- came Negative	Reaction of Spinal Fluid Less Positive Un- changed		
Dementia paralytica, mild	27	5	22	21	...	1	...	13	8	1	13	7	2
Dementia paralytica, intermediate	37	8	29	21	2	3	3	5	23	1	5	21	3
Dementia paralytica, severe	17	3	14	2	6	3	3	3	6	5	2	7	5
Tabetic form of dementia paralytica	32	5	27	17	3	5	2	10	11	6	10	10	7
Tabes dorsalis, mild	6	2	4	4	...	...	...	3	1	...	2	1	1
Tabes dorsalis, intermediate	26	10	16	9	4	3	...	8	4	4	8	2	6
Tabes dorsalis, severe	15	6	9	2	4	1	2	4	3	2	5	2	2
Meningeal neurosyphilis	6	0	6	5	1	...	...	4	1	1	5	1	...
Vascular neurosyphilis	12	1	11	4	1	4	2	3	7	1	3	6	2
Meningovascular neurosyphilis	10	1	9	8	...	1	...	4	4	1	5	4	...
Asymptomatic neurosyphilis	20	2	18	11	5	2	...	11	6	1	11	5	2
Total	208	43	165	104	26	23	12	68	74	23	69	66	30
Per cent	...	20.6	...	63	16	14	7	41	45	14	42	40	18

*From Simpson, W. M.; Kendell, H. W., and Rose, D. L.: Treatment of Syphilis with Artificial Fever Combined with Chemotherapy; Results of Ten Years of Experience; Critical Review, Ven. Dis. Inform. (supp. 16) pp. 1-51, 1942.

TABLE 3.—*Data on Patients Treated with Combined Artificial Fever Therapy and Chemotherapy**

Type of Neurosyphilis	Number Treated	Incom- plete cluded Follow- up Data	In- complete eluded Follow- up Analy- sis	Remis- sion proved	Im- provement pro- ved	Not Im- proved	Prog- ressed	Be- came Negative	Reaction of Blood Less Positive Un- changed	Be- came Negative	Reaction of Spinal Fluid Less Positive Un- changed		
Dementia paralytica, mild	48	9	39	23	14	2	0	18	19	2	16	16	7
Dementia paralytica, intermediate	47	9	38	21	9	5	3	8	29	1	6	26	6
Dementia paralytica, severe	19	3	16	2	8	3	3	4	7	5	3	7	6
Tabetic form of dementia paralytica	37	6	31	18	6	5	2	12	12	7	11	12	8
Tabes dorsalis, mild	8	2	6	4	2	...	...	5	1	...	3	1	2
Tabes dorsalis, intermediate	30	13	17	9	5	3	...	8	5	4	8	3	6
Tabes dorsalis, severe	22	12	10	2	5	1	2	5	3	2	6	2	2
Meningeal neurosyphilis	9	1	8	7	1	...	...	5	2	1	6	2	...
Vascular neurosyphilis	13	1	12	4	1	4	3	3	8	1	3	6	3
Meningovascular neurosyphilis	12	3	9	8	...	1	...	4	4	1	5	4	...
Asymptomatic neurosyphilis	26	4	22	...	...	...	...	12	9	1	11	9	2
Totals	271	63	208	98	51	24	13	84	99	25	78	88	42

* From Kendell, H. W.; Simpson, W. M., and Rose, D. L.: The Treatment of Neurosyphilis by Artificial Fever-Chemotherapy, Arch. Phys. Therapy 23:517 (Sept.) 1942.

TABLE 4.—*Early Syphilis**

Type	Cases	Previous Chemotherapy	Serology Before Fever	Chemo-therapy, Fever Therapy	Serologic Reaction After Fever	Observation	Final Status
Seronegative							
Dark field positive	2	None	Negative	25 hours	Negative	3-5 years	No Relapse
Seropositive Primary	12	extensive		25-50 hours	21 negative	3-5 years	No Relapse
Seropositive Secondary	22	10 none	4 plus		1 positive		
Wassermann fast	38	Extensive Serofast		50-75 hours	16 (42%) negative 22 (57%) positive Units-10	3-5 years	34 stationary 4 relapse

* From Phillips, Kenneth: The Practical Application of Fever Therapy in Military Medicine During Active Warfare, *Brit. J. Phys. Med.* n.s. 4:173 (Dec.) 1941.

in 48 per cent; it was unchanged in 12 per cent. The reaction of the spinal fluid became negative in 37 per cent and less positive in 42 per cent; it was unchanged in 20 per cent.

Early Syphilis

Phillips in 1941 presented a series of 62 cases in which early syphilis was treated by fever and chemotherapy. His technic was to maintain a temperature of 105.6 to 106 F. for four hours, a total of thirty to fifty hours being given; to inject the arsenical compound at the peak of the fever; to give heavy metals between fever sessions, and to give the fever every fourth or fifth day. His results are presented in table 4.

Boak, Carpenter, Jones, McCann and Warren, of the University of Rochester, and Kampmeir and Williams, of Vanderbilt University, in 1942,¹⁵ reported a small series of cases in which early acute syphilis was treated by a single prolonged fever session only, no chemotherapy being given (table 5). Their conclusions were as follows:

1. Most of the spirochetes are apparently destroyed.
2. Some parts of the body do not rise in temperature to spirocheticidal levels during all or part of the febrile period. The skin over the face and trunk, and the mucous membranes of the lips, throat, nose and vulva, may have temperatures 0.5 to 3 C. below the rectal temperature.
3. One treatment of fever only (ten to fifteen hours at 41 to 41.5 C.) resulted in prompt resolution of the lesions in a series of 8 cases of primary and secondary syphilis; they usually became dark field negative. In general, patients improved in two to three days as much as in two weeks of chemotherapy. No effect on the quantitative Wassermann reaction was noted.
4. In 4 out of 5 cases in which patients did not receive subsequent chemotherapy, mucocutaneous relapses developed within four months. The 3 other patients were given routine chemotherapy within two weeks after the administration of fever therapy.

Boak, Carpenter and Warren¹⁶ in 1942 published some interesting results in rabbits in regard to the effects on experimental syphilis of concurrent treatment with neoarsphenamine and artificially induced fever at 41.5 C. (table 6). From this work they concluded that:

1. Experimental syphilis in rabbits can be cured by a mode of therapy combining a subcurative dose of neoarsphenamine (10 mg. per kilogram of body weight) with a subcurative session of artificial fever (three or four hours at 41.5 C.).
2. Superior results are obtained when the drug is administered before the fever is induced rather than immediately after termination of the fever.
3. Increased heat kills or attenuates *T. pallidum*, causes an increase of the circulation with more widespread distribution of the drug and increases the spirocheticidal activity of the drug, owing possibly to the increased production of arsenoxide (an oxidation product of the arsphenamines).

Simpson, Rose and Kendell¹⁷ in 1942 originally planned that 25 patients

TABLE 5.—Summary of Data on 8 Patients Treated with Prolonged Fever Therapy.*

Case	Race	Sex	Age	Syphilitic Lesion		Dark Field Temperature		Dark Field Examination Result of Fever		Comment	Site	Time	Relapse		Dark Field Examination After Fever		
				Type	Duration	Examination	Hours	Duration	Hours				.....	.....	.....	.....
1	W	F	21	Chancre, vulva; mucous patches, oral	+	41.5	15	+	15	Chancre smaller, but dark field posi- tive after 3 days; mucous patches dry	.....	.....	.....	.....	.....	8 days
2	W	M	39	Chancre, penis; maculopapular rash	8 weeks	+	41.0— 41.5	9	—	Rash faded and chancre healed within 10 days	.....	.....	.....	.....	.....	10 days
3	W	M	18	Chancre, penis; maculopapular rash	.....	+	41.5	14	—	5	.....	.....	.....	.....	.....	11 days
4	W	M	25	Chancre, penis; Chancre, vulva;	4 weeks	+	41.5	15	—	5	Rash cleared and chancre healed promptly	7 weeks
5	C	M	21	Condylomas of anus, scrotum, thigh; mucous pat- ches, oral	6 weeks	+	41.5	14½	—	9½ 14½	.....	.....	.....	.....	.....	6 weeks
6	C	F	19	Moist le- sions, vul- va; pap- ular rash	12 days	+	41.5	14½	—	4	Mucous patches, dark field exami- nation positive 53 hours after fever onset; second treatment given 1 week after first; condylomas healed rapidly after first treatment	5 weeks
7	C	F	18	Condylomas of vulva; mucous pat- ches, oral	4 weeks	+	41.5	15	—	7	Few spirochetes found in partially healed vulval le- sion 5 days after treatment	5 weeks
8	C	F	19	Condylomas of vulva; circinate skin lesions	Sev- eral weeks	+	41.5	15	—	6½	Mouth lesions healed in 4 days; condylomas re- solved in 10 days	4 months
											Lesions healed rapidly after fever treatment	Condy- lomas; circinate skin lesions	3 weeks				

* From Boak, Ruth A.; Carpenter, C. M.; Jones, Nathaniel; Kampmeier, R. H.; McCann, W. S.; Warren, S. L., and Williams, J. R., Jr.: The Inadequacy of a Single Pro-
longed Fever for the Treatment of Early Acute Syphilis, Am. J. Syph., Gonor. & Ven. Dis., **26**:291 (May) 1942.

suffering from early syphilis were to be selected for treatment with artificial fever alone, for ultimate comparison with a similar number of patients treated with chemotherapy alone and with an equal number treated with a combination of fever and chemotherapy. However, after the first 8 patients had been treated with fever alone, it was necessary to stop because of the occurrence of clinical relapses. The total fever given was fifty hours at 105 to 106 F. in sessions of five hours at weekly intervals for ten weeks.

TABLE 6.—*Effects on Experimental Syphilis in Rabbits of Concurrent Treatment with Neoarsphenamine and Artificially Induced Fever at 41.5 C.**

Treatment Tests	Number of Animals	Number "Cured"	Percentage "Cured"
Experiment 1:			
10 mg. of neoarsphenamine per kilogram of body weight, followed by a 3 hour fever at 41.5 C.....	23	23	100
Experiment 2:			
10 mg. of neoarsphenamine per kilogram of body weight, followed by a 4 hour fever at 41.5 C.....	20	19	95
Experiment 3:			
3 hour fever at 41.5 C., followed by the intravenous injection of 10 mg. of neoarsphenamine per kilogram of body weight	20	15	75
Controls			
Untreated (to test for spontaneous "cure").....	14	0	0
10-20 mg. of neoarsphenamine per kilogram of body weight (no fever)	10	3	33
5, 6 or 7 hour fever at 41.5 C. (no drugs).....	38	4	11

* From Boak, Ruth A.; Carpenter, C. M., and Warren, S. L.: The Concurrent Treatment with Fever and Neoarsphenamine of Experimental Syphilis in Rabbits, Am. J. Syph., Gonor. & Ven. Dis. 26:282 (May) 1942.

They also treated 27 patients who had early syphilis by means of artificial fever combined with chemotherapy. The fever consisted of either twelve sessions of three hours or ten sessions of five hours at temperatures of 105 to 106 F. administered once or twice weekly; with each treatment an arsenical compound was given plus bismuth just before the treatment. After this, injections of the chemotherapeutic agents were continued for an additional twenty weeks, the two being administered concurrently. Serologic reversals were obtained as follows: Primary syphilis treated twice weekly was cured (serologic reversal) in twenty-three to sixty-four days. Secondary syphilis treated twice weekly was cured in twenty-eight to sixty-six days; but when treated once weekly, it was cured in fifty to ninety-three days. The time at which reversal actually occurred was probably less than the recorded time, since daily tests were not performed.

The serologic reactions of this group were determined by the Kahn quantitative procedure at frequent and regular intervals over a period of four to eight years following. Tests were made before each fever treatment and were repeated monthly for five months and then twice yearly.

The Kahn quantitative test is a flocculation test based on the reaction between a constant quantity of antigen and carefully graded dilutions of syphilitic serum, in which $S = 4D$, S being the number of units and D the dilution. Clinical relapses could thus be anticipated by changes (a rise) in the quantitative serologic titer.

Not one patient after serologic negativity was obtained has shown further evidence of syphilis either clinically or serologically. The quantitative Kahn units varied from 4 to 1,000 before treatment. Kolmer and Kline tests also were done. There was no correlation between the initial serologic titer and the clinical status of the patient. It was observed that under adequate treatment the decline of serologic titer occurred at a constant rate and that

the time rate of serologic reversal to negative appeared to be a function of the height of the initial titer; the lower the height of the initial titer, the more rapid the reversal.

Simpson, Rose and Kendell¹⁷ also treated a group of 23 patients with a single intensive session of combined fever and chemotherapy. These all had early syphilis proved by dark field and serologic examination. They were observed for from six months to two and a half years.

The procedure was briefly as follows: Just before administration of fever, an intra muscular injection of 0.25 Gm. (4 grains) of bismuth salicylate was given; then the patient was placed in the hypertherm and given a ten hour session of fever at 106 F. (41.1 C.). The arsenical compound (mapharsen) was first given when the temperature reached 106 F. The total quantity given ranged from 120 to 240 mg.; this was generally given in divided doses every three hours, the total amount of course being given during the ten hour session of fever. Two patients were given the arsenical compound by continuous drip.

The only known complication, a transient elevation of serum bilirubin, with mild clinical jaundice, was observed in several instances. It was noted that in clinically similar cases there was a variation of the Kahn quantitative reactions, and it was again noted that the higher the titer, the longer the time for reversal. The titer appears to decline at a constant rate. There appeared to be no correlation between the time required for serologic reversal and the amount of chemotherapy administered. Reversal time varied between twenty-one and eighty-four days with the exception of 1 case, in which the reaction took 176 days to reverse.

It appears fair to assume that artificial fever therapy fortifies and intensifies the action of antisiphilitic chemical agents; patients tolerate it more readily; complications are minimized; neurosyphilitic patients can be treated on an ambulatory basis; there is the possibility of a one treatment cure. Any one of the foregoing would be ample justification for the further and fuller use of artificial fever in the treatment of syphilis.

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THERAPEUTIC ULTRAVIOLET AND THE WAR

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Like all physical therapy modalities, ultraviolet radiations have gone to war. The increased demand for equipment to produce such radiations and the conservation of strategic materials have necessitated limitations, the assignment of new equipment being restricted to the armed services, hospitals and approved war installations. Although a student of ultraviolet therapy for nearly a quarter of a century, I am not a physician. For this reason I view the subject in a general manner as a scientist rather than as a practitioner. Unless references are cited, the opinions given are my own.

In the United States the armed services, the army and the navy, have first call on ultraviolet lamps. They employ large numbers in their hospitals and clinics for routine treatments. They also conduct large scale experiments on worthy new applications. One such progressive experiment has recently been reported by O. H. Robertson¹ in his discussion of air sterilization by means of ultraviolet lamps.

The importance of keeping the men in the armed services fit or speeding their convalescence is obvious to all. It may be equally important to keep the workers in the factories, mines and shipyards physically and mentally healthy. The soldier and sailor must have the backing of stalwart civilian workers. While these considerations are generally recognized in this country, few firms include ultraviolet baths in their industrial fitness programs. Since this is so, it should be of interest to investigate briefly what, if any, consideration has been given to the inclusion of ultraviolet therapy the programs of our allies and our enemies.

The Hitler regimen in Germany during their preparatory years for war recognized the importance of good health for Germans. As a part of their health program they advocated the employment of sun lamps and installed many solariums at mines and factories. In the Ruhr district alone there were not less than 60 sun ray clinics.^{2, 3}

The British began their preparations for rearmament with due consideration

for the health of their workers. Ultraviolet baths under the supervision of a medical officer were recommended in many instances and by 1943 the list of operating installations of quartz lamp solariums read like a "Who's Who" of the British mining and manufacturing industry.

Influenced by reports from Great Britain and Germany, mining companies in North Sweden installed ultraviolet solariums and one of their medical officers reported⁴ after a year's experience that the solarium was beneficial to both the miners and the operators. The reduction of absences due to illness was most marked. The mines gained one hundred and thirty-four additional working days per hundred workers during the year. This was a reversal of the previous trend and contrasted sharply with that of neighboring mines which did not have ultraviolet solariums.

The general consensus of medical opinion in the United States is that ultraviolet irradiation of the individual is not a preventative for colds. Yet colds are so important that the question will not down. President Roosevelt is reported to have remarked at an Associated Press conference that if it were not for the common cold we would be in Berlin today — sixty million man days are lost a

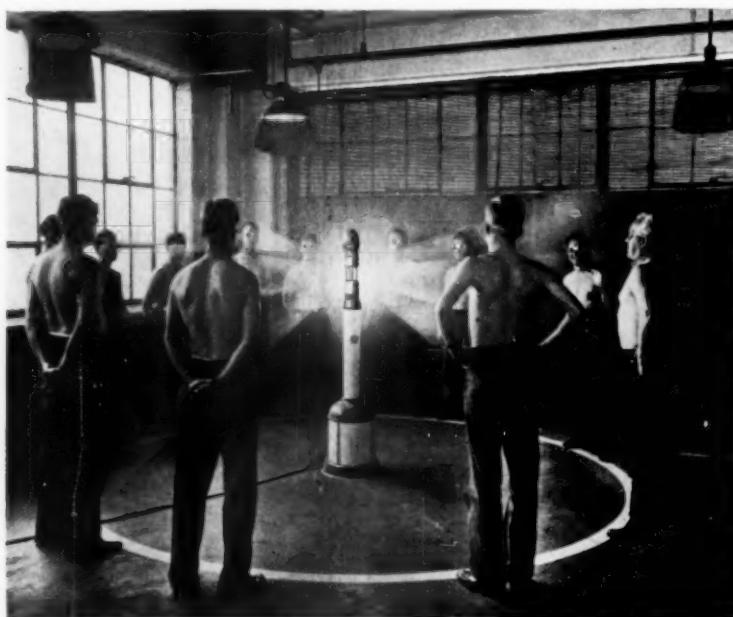


Fig. 1. — Industrial ultraviolet irradiation.

year through the common cold. Recent reports⁶ have advised that no method of preventing colds is effective, and still observations continue to be made and claims staked that ultraviolet irradiation of the individual does reduce the incidence of colds. The most recent claims have originated in Great Britain. For example, the medical officer⁷ of a large factory studied the colds of 1,635 employees and tried various preventatives, among them ultraviolet irradiation. He concluded that, whereas the average absence due to colds amounted to one hundred and six days per hundred workers, the group which received ultraviolet irradiation with quartz mercury lamps had only sixty-six days of absence per hundred persons. Of all the preventatives tried, this one alone showed a definite effect. Still other tests made in London,⁸ involving 1,444 persons, indicated a notable reduction in absences because of illness, and in particular because of colds, for those who received sun ray treatments under medical supervision in the light clinics.

Allied to but aside from this question, the evidence that the incidence of infections of the respiratory tract may be controlled to a notable degree by ultraviolet air sterilization continues to mount.^{6, 1, 8, 9} In addition to hospital experiments, factory installations in the United States have indicated a marked decrease in colds and other respiratory ailments with resulting less absenteeism.

Ultraviolet solariums have been widely used in Russia in the factories.¹⁰ It is claimed that their use has assisted in decreasing absenteeism on account of illness and that a precision worker makes fewer errors and shows less fatigue during periods when he is subjected to light baths than at other times. No reason was given for this alleged improvement.

These reports raise questions as to the accuracy of observation and the degree of control. There exists always the possibility of overenthusiasm and magnification of the apparent results. In Great Britain it appears however, that the industrial and welfare medical officer was so sure that he was able to prevail on the authorities to allot strategic materials, labor, fuel and factory space to the production of quartz ultraviolet lamps at a time when Britain needed every gun, every plane and every pork chop that could be imported. Lamp materials

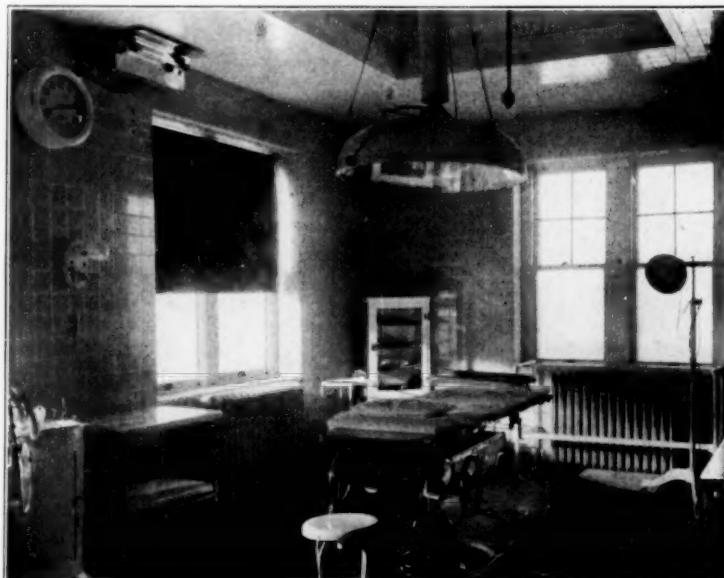


Fig. 2.—Air sterilization unit for operating room.

all had to be imported, and it seems unlikely that the British people would have preferred sun lamps to more meat unless they were convinced that they need the lamps. It is noteworthy that most of these lamps went to sun ray clinics for civilian use under medical supervision.

In Germany the ultraviolet lamp was recognized as an essential for the civilian population and was on the preferred list, from which butter was absent. Its manufacture is known to have continued until the war with the United States. Since this event information has not been available.

In the United States and Canada the sun lamp has found only limited favor as health insurance. Is it because the American is too busy for such insurance, or has he found a substitute? There must be an answer.

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(Continued on page 620)

A HYDROGALVANIC APPARATUS OF IMPROVED TYPE

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Hydrogalvanic baths have been comparatively little employed in recent years in physical therapeutic practice in the United States. The efficiency of some of the newer methods of ion transfer, the reaction against the indiscriminate use of diathermy in all types of chronic inflammatory conditions, reawakened interest in the therapeutic use of the galvanic current as a tissue alterant and counterirritant. Concomitantly renewed attention has been paid to hydrogalvanic applications. For the past two years I have employed an improved type of hydrogalvanic apparatus and found it a welcome aid in the management of a number of conditions.

The Apparatus

The commercially manufactured apparatus makes possible galvanic bath treatment of the entire body in a tub and local bath treatment of one or all extremities in one to four tanks, as well as employment of the usual moist pad electrode treatments and of ion transfer applications alone or in combination with hydrogalvanic technic. The apparatus changes the alternating current from the line power by a selenium type rectifier into a very smooth galvanic current, and it also incorporates a standard 45 volt battery. These two sources of power can be used in two separate circuits, each one with four outlets. In addition a

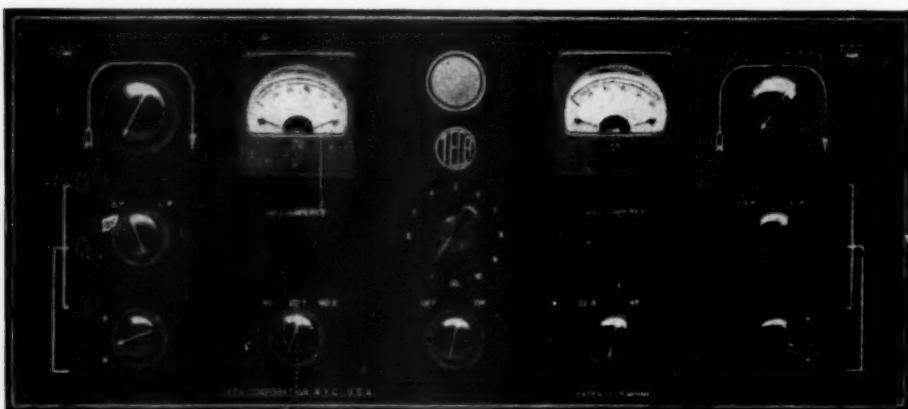


Fig. 1. — Control panel of hydrogalvanic apparatus.

rippled or pulsating current is also available when the alternating current power is being used. The switch panel shown in figure 1 controls the source, intensity and polarity of all applications. A current flow up to 200 milliamperes is available in either of the two circuits. The wiring of the control panel (fig. 2) is such that the supply line is in no way directly connected to the patient circuits; hence, the treatment circuit is ground free and the patient even in a full bath can safely touch grounded metal objects. All circuits are separately fused to make sure that the patient cannot get any dangerous amount of current.

The electrodes consist of carbon plates held in perforated wood which en-

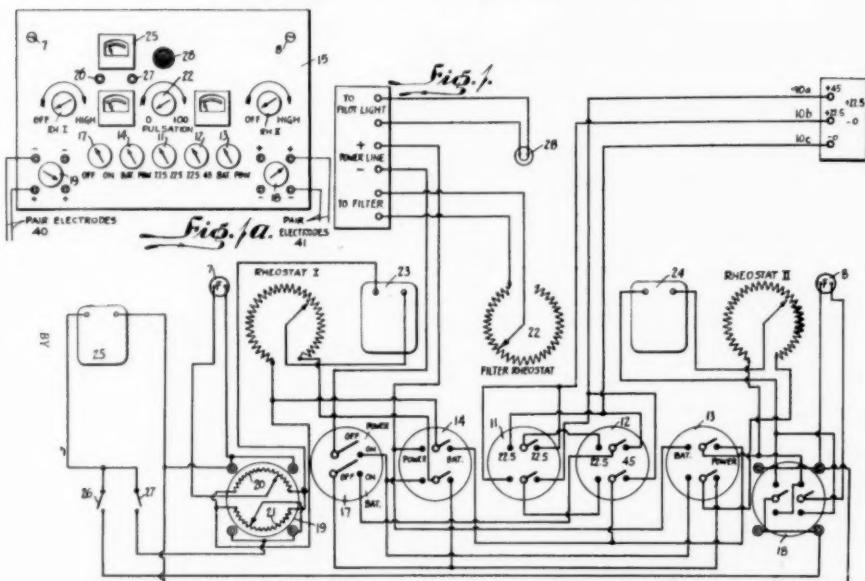


Fig. 2. — Wiring diagram of hydrogalyanic apparatus.

ables the current to pass but prevents the plate from touching the patient's skin (fig. 3). Rubber suction knobs secure electrodes anywhere in the bath tub or

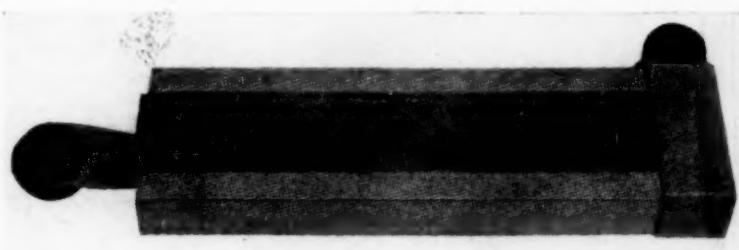


Fig. 3. — Standard electrode for hydrogalvanic treatment.

treatment tanks. For intensive skin and for localized muscle and nerve stimulation a special small electrode serves. In general body treatment, in addition to the standard size electrodes, a back electrode consisting of three standard size electrodes and equipped with a head rest is available.

There were no accidents of any sort with this apparatus in spite of the extensive use; the availability of two separate circuits and the possibility of their varied combinations makes possible the use of a number of convenient techniques.

General Technic

The bath tub or treatment tanks are filled with tap water at a temperature comfortable to the patient (anywhere between 92 and 100 F). While it is well known that a small amount of salt decreases the resistance of the water and allows more milliamperage to pass at a lower voltage, in recent years adding of a tannin bark solution became the standard procedure in the Stanger and Heller baths used abroad and was favorably reported on by clinicians (Scholtz¹) and others. For use with the apparatus here described a special tannin solution is offered, the composition of which is tannic acid, sodium tannate, iron sulfate, essential oil, and rectified oil of birch tar. Experiments which I have conducted have shown that this solution reduces the resistance of the water, it also decreases skin tingling; by its dark color it helps to overcome social embarrassment

in general body treatment and saves the use of linen sheets or other body covering.

In local body treatment the simplest procedure is to place one extremity in one tank between two electrodes; these are connected to the positive and negative poles of one circuit and an amount of current comfortably tolerable to the patient — between 20 and 80 milliamperes — is gradually turned on. This is several times the amount which can be safely applied with ordinary moist pad electrodes. In the routine treatment, after ten to fifteen minutes the direction of the current flow is reversed by reducing the current to zero, turning the pole-changing switch and then advancing the current again and allowing it to flow for another ten to 15 minutes. Stimulative effect may be exerted by advancing the pulsating current control switch and admitting a tolerable amount of rippled current. That with this transverse treatment technic a variable amount of current passes through the skin is shown by the marked hyperemia of the entire area submerged; penetration beyond the skin is proved by definite muscle contractions when larger amounts of rippled current are applied or the special small electrode is applied.



Fig. 4. — Tank treatment by hydrogalvanic apparatus.

For passage of more current along either one or two extremities two tanks are employed, with one electrode in each, since for completion of the circuit the current has to travel through the parts outside of the tanks. Motor points stimulation can be given by connecting the special stimulating electrode to the negative pole of one circuit and applying it over the extremity between two large electrodes connected to the positive pole of the circuit. A combination of tank treatments with ordinary moist pad electrodes is also possible, as for instance application of a moist pad over the shoulder and holding of the forearm in a tank with the polarity suitably chosen. Ion transfer applications are made by applying a moist pad electrode, soaked in the solution to be introduced, at the proper pole or filling the tank with a diluted solution (fig. 4).

Four tank, or "four cell," treatments are given by inserting the extremities and regulating polarity and current strength according to the condition. It is possible to treat 2 patients simultaneously by employing the two separate circuits. In general body treatment in a bath tub, as a rule five electrodes are used. The

usual technic is to establish one longitudinal circuit to one side of the apparatus and a transverse circuit to the other side. Generally the rectified current is used for both circuits; the battery current may be employed when two circuits are used independently or when it is desirable to employ a pulsating current on one part of the body and a smooth galvanic current on the other. The polarity of the electrodes and the direction of current flow can be regulated according to a number of schemes. The fact that all electrodes are movable makes it possible to concentrate the current flow to any desired part and vary the amount of local or general stimulation. From 60 to 100 milliamperes may be used on the two circuits. Duration of general bath treatment is from fifteen to thirty minutes. Itching occurs in a number of instances after either local or general treatment. Application of fine talcum powder or of a calamine lotion or ointment promptly relieves this, and no untoward cumulative skin effects of successive electric baths have been observed.

Clinical Adaptability

In spite of the frequent charge of empiricism in the application of hydro-



Fig. 5. — General body treatment by hydrogalvanic apparatus.

galvanic methods, the literature shows that early investigators have made extensive laboratory and clinical studies. Several monographs were published by leading clinicians in England,² Germany^{3, 4, 5} and the United States,⁶ and in recent textbooks (Laqueur and Kowarschik⁷) there is fairly general agreement as to the scope and usefulness of these applications (fig. 5).

The factors governing the mode of action of hydroelectric baths are the electric current and the technic of its application, the temperature and hydrostatic action of the water and additional stimulation when chemical ingredients are added. It seems established that only about one third of the current employed flows through the body, but even this amount is larger than in any other form of galvanic or low frequency treatment, and it is evenly and relatively painlessly distributed.

The electrochemical effects of the current employed—constant galvanic or pulsating—bring about chiefly a stimulation of the skin and of the nervous system. *According to Wedekind⁸ and others the filling of the peripheral blood

vessels is normally decreased and the blood pressure generally falls, especially in cases of hypertension. Electrocardiographic tests as well as studies of the blood picture did not show consistent results; neither did metabolic tests prove a conclusive effect. Clinically there appears to be a definite influence in the general well being and appetite of patients. The buoyancy of the water is a factor in the general comfort and increased mobility of painful or weak parts in the hydroelectric bath. As the water is usually tepid, the thermal effect is generally negligible. In local treatments, the action of the galvanic current as a stimulant of local metabolism and as a counterirritant is well known and explains most of the clinical results. The negative pole is more effectively employed for muscle stimulation. A further study of the physiologic influence of the factors enumerated should be of interest.

Among the conditions in which galvanic baths have been generally recommended as aids to general medical treatment are mild general arteriosclerosis, cardiac neurosis and myocardial disease, as well as rheumatic and nervous ailments; polyarthritis, lumbago, polyneuritis, tabetic paresthesias, etc. In our experience at the Physical Therapy Department of the Poly-clinic Hospital we have seen the best clinical results in cases of multiple joint involvement, both rheumatoid and osteoarthritic. The relief from pain and the improvement of function was striking in some of the cases, and the general roborative effect was marked in most cases. Very satisfactory responses were also seen in several cases of polyneuritis and of peripheral nerve injuries, especially those showing extensive trophic changes. It would seem that there should be a definite field of applicability of hydrogalvanic baths in many war injuries and in nervous exhaustion following war work or war strain; this is indicated by some of the early reports that reached us; furthermore, because of the present day handicaps in the use of short wave diathermy apparatus in many cases, an alternate treatment measure such as use of galvanic current appears desirable. Extended clinical observation of controlled cases may indicate further uses.

Summary

An improved type of hydrogalvanic apparatus is described, and some of the possible uses of hydroelectric baths as part of the physical therapeutic armamentarium are pointed out.

2 East 88th Street.

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SOME ASPECTS OF PHYSICAL THERAPY IN RELATION TO PERIPHERAL NERVE INJURIES *

LIEUTENANT COMMANDER RODNEY D. CHAMBERLAIN

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In war casualties, peripheral nerve injuries hold a place of major importance. In the Russo-Japanese war the incidence was from 0.75 to 3.4 per cent, and in the war from 1914-1918, from 1.5 to 4.5 per cent. In the latter, 14 to 18 per cent of all injured extremities showed involvement of the peripheral nerves.¹ These statistics are probably inadequate because of the varying lengths of time elapsing between the injuries and the gathering of the data. Some indication of the incidence of these lesions in the present war is seen in Crile's report on the casualties from the initial engagement in the Solomons which he saw in the naval hospital at Auckland, New Zealand.² In 30 of the 346 cases in this group peripheral nerve injuries were noted, an incidence of almost 9 per cent.

Treatment of injuries of peripheral nerves is painstaking and time consuming. Physical therapy must be instituted early and continued for months to years. Not only is the treatment enough to try the patience of the injured man and physician alike, but the means of evaluating treatment are likewise tedious and sufficiently indistinct that there is room for great improvement. Thus the large number of these casualties present an opportunity for study of certain heretofore considered methods of therapy and of evaluating results.

Pathologic Anatomy and Physiology

The peripheral nerves are made up of both myelinated and nonmyelinated nerve fibers. Each fiber is surrounded by a tubular sheath of cells known as the neurilemma or "sheath of Schwann." All peripheral nerves, whether myelinated or not, have a neurilemma which is interrupted at the limits of each Schwann cell by constrictions called "the nodes of Ranvier." The neurilemma is necessary for regeneration of a nerve. Within the neurilemma there is an inner myelin or medullary sheath in some nerve fibers.

The manner in which the nerve bundles or funiculi are arranged within the nerve trunk at first was held to be of great surgical importance. Evidence on this point, however, is conflicting; for the funicular arrangement is usually complex and irregular. The nerve endings are either sensory or motor. The sensory endings may be free or present various spindle or corpuscular arrangements. The motor endings are known as motor end plates.

When the continuity of a peripheral nerve is interrupted, the entire distal segment and the proximal segment as far central as the first node of Ranvier undergo wallerian degeneration. This degeneration apparently occurs in all parts of the affected segment concomitantly. The axons break up into irregular clumps of granules. The myelin sheaths become divided into elliptic segments. The myelin disperses into globules. The cells of the neurilemma increase in number. Then the fragments of the axon and the myelin are gradually absorbed, and the neurilemma is filled with proto-

* The opinions and assertions contained herein are the private ones of the writer and are not to be considered as official or reflecting the views of the Navy Department or the Naval service at large. This work was done by Lieutenant Commander Chamberlain as a student officer under direction of Dr. F. H. Krusen, while he was on assignment at the Mayo Foundation for instruction in physical medicine.

plasm. This process is complete in about three weeks. The degenerated nonmyelinated fibers present about the same end picture.

The nerve endings begin to degenerate immediately after section and eventually disappear. This is true of both motor and sensory endings. The anterior horn cells and the spinal ganglion cells also show pathologic changes.

Regeneration begins probably as early as the first day in myelinated fibers, with a breaking up of the axons in the central segment into small branches which grow into the exudate and into the neurilemma sheath. Unmyelinated fibers begin to regenerate in about two weeks. The downward growing, branching axons at first pursue a spiral course but eventually become more or less parallel. Apparently regeneration is not confined, as many have thought, to the central segment. Young and his associates³ concluded from their studies that "there is . . . no doubt that Schwann cells (which resemble fibroblasts), growing mainly from the peripheral stump, can effectively bridge gaps between cut ends. . . ." The motor and sensory end organs also regenerate.

The rate of growth of nerve fibers has been variously estimated at from 0.25 to 4.0 mm. per day. One millimeter is the value most commonly assigned, but the recent studies of Billig and van Harreveld⁴ indicate a greater rapidity of growth of the motor axon than heretofore was supposed. As would be expected, a conglomeration of fibrous tissue acts as a barrier to axon penetration, as in a neuroma. The axons also seem to be slowed down in crossing a suture line.

Adson⁵ has stated that degeneration begins within the first thirty-six to seventy-two hours and that it is probably complete about the twelfth day. He also pointed out that regeneration and degeneration occur simultaneously. He considered that fibrils grow at the rate of 1 to 2 mm. per day, that it requires about six weeks for them to cross the suture line and about another six weeks for the motor end plate to become restored. It is apparent, therefore, that twelve weeks plus a day for each millimeter or two of distance between the site of nerve injury and the muscle innervated by it must be allowed before any active motion can be expected.

From the standpoint of function, nerves may be classified as visceral and somatic, afferent or efferent.⁶ The activity of skeletal muscles depends on the somatic afferent fibers. The somatic afferent fibers may be subdivided into (1) exteroceptive, which are activated chiefly by external stimuli, and (2) proprioceptive, which are activated chiefly by stimuli from within the body itself, as in the muscles, joints and tendons. Functionally speaking the somatic afferent nerves may be classified in another way as those with (1) epicritic sensibility, which includes sensibility to light touch, point localization, differentiation of two points and appreciation of fine variations in temperature; (2) protopathic sensibility, which includes gross appreciation of pain and extremes of heat and cold, and (3) deep sensibility, which includes appreciation of pain, pressure, position and movement.⁷ The nerves which have deep sensibility are the same as those which have proprioceptive functions.

In testing for functional validity of nerve and muscle it has been common to employ measurements of chronaxia. Chronaxia is the shortest duration of a current necessary for excitation when its strength is twice the rheobase. The rheobase is the least amount of current that will produce excitation when not limited by the time factor. Chronaxia is expressed in sigmas (a thousandth of a second). An impulse may pass from nerve to muscle only when the chronaxia of the two are of the same order. Thus Lapicque⁸ has attributed the onset of muscular fatigue to development of heterochronism between a muscle and its nerve. However, Schneider⁹ has

indicated that fatigue is responsible for the lengthened chronaxia of muscle. He further pointed out that fatigue is an indefinite concept and that it may be either the diminished ability of muscle to be reached by stimuli or the diminished capacity for repeating activity.

Grossly, lesions of the nerves may be varied. A slight crushing of the nerve, partial severance, complete interruption with fragmentation, penetration and compression are the chief types of lesions. The functional disabilities likewise vary from slight temporary loss to complete and permanent sensory and motor impairment.

Treatment

The diagnosis of nerve injury and of the degree of functional impairment at the outset is the basis for therapy and the estimation of improvement. Close cooperation of the neurologist, orthopedist and physical therapist is essential for the optimum in diagnosis and treatment. Furthermore, patients who have nerve injuries can be treated best if segregated in one or more wards.

The surgical treatment will be disposed of briefly, since this is not the primary thesis, and since, as Bristow¹⁰ has said, "Operation is only one incident in the course of treatment." Classic nerve suture, neurolysis, the plasma or fibrin suture of Young and Medawar¹¹ or a combination of these procedures may be used. At the time of operation electrical testing of the nerve may help the surgeon to choose between neurolysis and section with repair.

"The importance of intensive physical therapy in all cases cannot be overemphasized, because its extreme importance has not always been appreciated in the past. The success of nerve suture depends on daily physical therapy continued without interruption for a year or more after operation."¹² The physical treatment will vary somewhat, depending on the stage of regeneration. Physical measures probably have no effect on the rate of the growth of the nerve fibril except as the circulation, improved by heat and massage, may influence such growth. So far there has been no controlled evidence to demonstrate this possibility.

Cooksey¹³ divided the clinical course of patients who have nerve injury into three stages: (1) from the time of injury until the circulation has become accommodated to the lack of muscle activity and absence of vasomotor nerve supply; (2) from the end of the first stage until the return of voluntary power commences, and (3) from the end of the second stage until maximal restoration of function has been obtained.

During the early stages splints have been recommended¹ in order to relax the paralyzed muscles and avoid deformity.¹⁰ They also aid in preventing overstretching of the muscles, which is generally considered injurious. Mennell¹⁴ in speaking of range of motion said, "A good working rule is that movement of the joint through the inner half of the arc of the range of the movement puts no strain whatsoever on the paralyzed muscle fibers." Cairns and Young¹² as well as Snow and Gurewitsch¹⁵ cautioned against overstretching the paralyzed muscle. Nevertheless, Hines¹⁶ has shown, at least in rats, that immobilization of a limb in a neutral position definitely retarded recovery from paralysis in terms of restoration of muscle mass and strength, and that overstretching and local fatigue were not detrimental. It would seem, therefore, that further controlled studies concerning splinting are indicated.

Heat and Massage. — Heat and massage should be applied during all stages of healing. The usual precautions against overheating an anesthetic or scarred area should be observed. While there is still a possibility of second-

ary hemorrhage, or in the presence of a spreading infection, massage, of course, should be omitted. The usual forms of luminous heat, diathermy, whirlpool bath and Kenny packs may be employed. Mennell said that for a paralyzed muscle massage should be delicate and that it is an "unpardonable sin" to compress a muscle against bone. This is in contrast to his advice during the preoperative stage, when he recommended deep massage and stretching of scar tissue to stimulate lurking bacteria. He also suggested cupping over the operative site to see if a pustular rash will develop. If signs of latent infection do not appear, the surgical procedure may be carried out. Within two to three days after operation there should be delicate massage around the site of the repaired nerve, which faintly mobilizes the tissues to prevent fibrous contracture. During recovery, massage should follow any active contraction of the muscle. Joint mobility must be maintained, but motion should not overstretch the paralyzed muscle fibers, and due allowance should be made for any tension on the nerve as a result of operation. Radical stretching of the nerve after operation can be most harmful.¹² The surgeon should give the physician prescribing physical therapy an estimate as to how much tension the nerve is under in each case.

Electrical Stimulation. — There has been a great deal of discussion concerning the value of electrical stimulation of paralyzed muscles. Osborne and Grodins¹⁷ in their critical review of the evidence stated:

In general, when daily treatment was given, when the periods of stimulation were relatively long, and when the current strength was sufficient to cause a vigorous muscle contraction, the results were favorable. . . . Without exception, those who have employed weak stimuli or short periods of stimulation report unfavorable results. Again, those who have attempted to adapt their stimuli to the changing excitability of the degenerating muscle have had better results.

Some of the more recent studies which were well controlled are those of Fischer,¹⁸ Gutmann and Gutmann¹⁹ and Hines.¹⁶ Krusen,²⁰ quoting Fischer stated:

. . . certain conclusions were drawn. Among them the following are particularly significant from a clinical viewpoint: (1) If a denervated muscle has been left untreated for about two weeks or more, faradic stimulation no longer produces any appreciable contraction. (2) In such instances, galvanic stimulation will provoke contraction and if treatment is repeated daily, the further lengthening of chronaxia will, to some extent, be delayed but not nearly so markedly as with early treatment by faradic current. (3) The fact that electrical treatment of muscles decreases the loss of weight and the water content which was previously increased by denervation, and also further increases "the quantitatively raised, but qualitatively impaired metabolism" seems to afford a clue for the explanation of the beneficial effect of the treatment. This effect is identical with the training effect on normal muscle produced by electrical stimulation. In normal muscles, also, the weight increases and the metabolism is raised and increased in efficiency by strong electrical stimulation. (4) A treated muscle five weeks after denervation has about the same weight as an untreated denervated muscle after about one week. (5) The power of a muscle treated for five weeks is appreciably higher than that of its untreated partner. . . . (6) Despite remarkable retardation in loss of weight and diminished loss of dry substance, the treatment has failed to improve the contractile mechanism. But after re-innervation, it seems reasonable to assume that a treated muscle with its higher excitability, its greater weight, its lower content of water, and its increased metabolism, might more easily be restored to normal function than an untreated muscle.

Gutmann and Gutmann crushed or cut the peroneal nerves in rabbits. They then stimulated with galvanic current and systemically exercised the paralyzed muscles on one side of each rabbit. The other side was left untreated. They concluded from gross and microscopic studies of the muscles, that this treatment was beneficial without doubt. "The treatment was sufficient to protect the denervated muscle to some extent from the loss of those factors which are essential for its normal and powerful action when it becomes re-innervated—namely, good trophic condition, low threshold of excitability and prompt contractility."

Hines said that electrical stimulation even though causing overstretching and local fatigue was not detrimental, and that such treatment retarded muscle atrophy before reinnervation and accelerated increases of weight and strength after reinnervation.

As to the proper type of current to be used and the length of each treatment, Hines, Thomson and Lazerre²¹ said, "It would seem probably that any form of electrical stimulus which is capable of eliciting strong contractions in paralyzed muscle will be found to be effective in decreasing the rate of atrophy. If this is true, the basis for the selection of the frequency, duration, kind and intensity of the stimulus can be the comfort and tolerance of the patient." This criterion is, however, so variable that the suggestion of Osborne and Grodins might be of more help. They stated that a close approximation to an ideal current would be "sine waves of variable frequency from 0.1 to 100 cycles per second, and in which provision is made for amplitude modulation (surging). . . . Thus a normal muscle will respond with a smooth tetanic contraction to a one hundred cycle wave surged at twenty to thirty per minute. A recently denervated muscle may give a similar response to a twenty cycle wave." Hines, Thomson and Lazerre²¹ found that a direct effect existed between the strength of stimulus and its effectiveness in delaying atrophy.

The recommendations of the workers mentioned seem much more forceful than those of Snow and Gurewitsch,¹⁵ who "do not apply to a paralyzed muscle an amount of current greater than that which will just produce a visible contraction in the corresponding muscle of an unparalyzed part" despite the fact that the chronaxia of the paralyzed muscle must be much greater than that of a well one.

When the patient is first able to contract voluntarily a previously denervated muscle voluntary activity should be substituted for electrical stimulation. It must be remembered that voluntary contraction may return long before the muscle has regained ability to respond to faradic stimulation. Apparently there is no substitute for active motion.

Exercise and Muscle Reeducation. — The effects of physical training on muscles in general have been pointed out by Schneider.⁹ The sarcolemma is thickened and connective tissue is increased. The muscle increases in size but gains in power out of all proportion to the gain in size. The quality of the contraction is probably improved. The content of phosphocreatine, glycogen and muscle hemoglobin is increased. Transmission to the end plate is speeded up, and there is more complete use of all fibers. The capillary bed is more fully used, and, finally, ability to coordinate increases.

The first appearance of voluntary movement may be missed unless the patient is tested from time to time on the powdered exercise board in order to minimize the effect of gravity. Early movement then may be continued on the board or with the aid of the pool or tank, the gravity component being allowed to increase as the strength of the muscle increases.

Mennell has laid down helpful rules for muscle reeducation:

1. Teach the antagonist to relax.
2. Demonstrate on the sound limb not only how relaxation of the antagonist is an essential part of contraction of the prime-mover, but also the movement for which the prime-mover is individually responsible.
3. The adjustment of the load through the use of gravity should be so gradual that the addition of the load should be imperceptible to the muscle [?] although perceptible to the senses of masseur and patient alike.
4. At every joint there is some one movement over which one particular muscle presides; it is this one movement which must be sought out for practice in the initial stages.

5.* The blending of rest and activity is an art in itself.

6. Both masseur and patient can go stale

7. A muscle will first begin to contract when the limb is placed at a position of perfect comfort as near to the limit of the inner arc of the range of movement as can be secured.

8. Fatigue is probably the worst enemy of any paralyzed muscle. . . .

9. It is absolutely necessary to keep in the fullest possible activity all muscles which are not affected and if possible in unison with the muscles of the unaffected side.

He added that the part should be warmed before attempting exercise, and that "until recovery is complete anything and everything which can be devised to exercise the recovering muscles should be prescribed." Mennell further said that the mental outlook of the patient is important and that "it has been said that it is far easier to rub a disability into a patient's mind than to rub it out of his limb. . . ."

Most authors have emphasized the importance of not fatiguing the muscles during the period of recovery. As has been previously mentioned, however, Hines in his studies found that local fatigue and overstretching were not detrimental.

In addition to the basic muscle reeducation, various other means of exercise should be employed as recovery permits. Among these may be mentioned Frenkel's exercises, gymnastics, exercise with the Knavel table and other forms of apparatus and occupational therapy. Any and all measures should be used to increase muscle strength and coordination of the muscle.

Billig and van Harreveld⁴ have developed a technic of interruption of motor nerves to paretic muscles in old cases of poliomyelitis by surgical procedures or heavy kneading with a blunt instrument or both for the purpose of stimulating axon branching during regeneration, on the theory that more muscle fibers will become reinnervated by the new axon branches. The results have been encouraging, and it may be possible to work out a similar technic in cases of injured peripheral nerves after the usual methods have been exhausted.

Evaluation of Results

Evaluation of results is difficult, for, as Cairns and Young¹² have stated, there are no standard criteria for recovery or proper evidence of regeneration. The picture is confused because of the overlapping of cutaneous nerves. Electrical reactions are not dependable. Usefulness is not always an indication. Tinel's sign (paresthesias on percussion distal to the injury) may be of some value. Stopford²² utilized the beginning return of protopathic sensation as the point of departure in estimating recovery. He then noted the time of completion of the protopathic sensibility and the beginning of epicritic sensibility.

Cairns and Young noted that nerves that are chiefly motor or chiefly sensory recover better than those with a greater variety of fibers. They stated, "Recovery of isolated muscle action almost never takes place." Possibly the splendid system of muscle reeducation developed by Sister Kenny will extend our ability to help isolated muscle actions to occur more normally.

Accurate determinations of chronaxia are difficult and have not yet come into routine use for estimating muscle recovery. A more extended procedure is that of Watkins,²³ who plotted electrical strength and duration relationships for comparative recovery curves. This method is apparently more valuable than determinations of chronaxia, but is even more beyond the reach of the average physician.

Summary

From this study I found that injuries to the peripheral nerves constitute important casualties, although statistics on this disability up to the present war have probably been inaccurate.

With regard to treatment of such injuries, physical therapy is of the

utmost importance. Splinting is indicated until proved not to be of value, although the danger of overstretching and local fatigue of muscles has possibly been overemphasized. Heat and massage, varied in kind and intensity according to the clinical course, are applicable throughout the course of treatment, for mobility of joints must be maintained. Electrical stimulation of paralyzed muscles should be employed, and exercise and muscle reeducation should be instituted as soon as voluntary movement is possible. There are no standard criteria for evaluating improvement.

Conclusions based on observations on the laboratory animal have given rise to contradictory opinions concerning certain aspects of treatment. The study and treatment of present war casualties should help to clarify many of these questions.

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THE GOLD KEY AWARD

The annual Gold Key Award which is given to the person who has made the most significant contribution to the field of physical therapy was presented to Dr. John S. Coulter of Chicago by the American Congress of Physical Therapy at its twenty-second annual session in Chicago, September 8 to 11, 1943.

The award was made in recognition of Dr. Coulter's many years of effort for the advancement of physical therapy as a physician, teacher and sponsor of legislation.

Dr. Coulter is professor and chairman of the Department of Physical Therapy at Northwestern University Medical School, chairman of the Council on Physical Therapy of the American Medical Association and is director of the departments of physical therapy at St. Luke's, Illinois Central, Passavant Memorial, Wesley Memorial and Alexian Brothers Hospitals in Chicago. He has recently served as chairman of the Subcommittee on Physical Therapy of the National Research Council. Dr. Coulter has contributed widely to the literature of physical medicine and has been the editor of several textbooks on the subject which are standard in their field.

Dr. Coulter was born in Philadelphia, September 27, 1885. He is a graduate of the University of Pennsylvania, where he was awarded the Alpha Omega Alpha honorary scholastic medical fraternity key. Dr. Coulter served in the army for ten years after his graduation from medical school, was a first lieutenant and then lieutenant colonel in the Surgeon General's Office of the United States Army. He served in France during the war of 1914 to 1918.

After the war he entered the practice of physical medicine in Chicago. In 1926 he became associate professor of Physical Therapy and subsequently professor and chairman of the Department of Physical Therapy at Northwestern University Medical School. There he initiated training programs in physical medicine for graduate and undergraduate students. He started the first training course for physical therapy technicians and a training course for physicians about 1927.

Dr. Coulter is a member and the treasurer of the American Congress of Physical Therapy. He is a member of the Chicago Society of Internal Medicine, the American College of Surgeons and the Society of Physical Therapy Physicians, and a member of the Rotary Club and the Chicago Athletic Club.

ARCHIVES of PHYSICAL THERAPY

OFFICIAL PUBLICATION AMERICAN CONGRESS OF PHYSICAL THERAPY

. . . EDITORIALS . . .

THE TWENTY-SECOND ANNUAL SESSION OF THE AMERICAN CONGRESS OF PHYSICAL THERAPY

Rehabilitation of the injured both in war and industry was the urgent concern of those interested in physical medicine who attended the meeting of the twenty-second annual session of the American Congress of Physical Therapy.

The new President, Kristian G. Hansson, M.D., of New York City, indicated the spirit which characterized much of what was said at the Congress when he stated, "Medicine and particularly the field of physical therapy which must play such a large role in the rehabilitation of war injured is prepared to meet the demand of the second World War."

In the general scientific sessions of the Congress, thirty-two papers were presented during the three day period. The symposium on rehabilitation of injured industrial workers and that on rehabilitation of injured members of the armed forces were important parts of the scientific sessions. There was constant emphasis on two great problems of medicine, that of serving the soldier and that of serving the industrial worker both of whom are playing such important parts in the war effort. Several papers of general interest were presented on rehabilitation by well-known workers in the field. Major Ora L. Huddleston, M.C., reported on the development of convalescent wards for rehabilitation. Other officers of the army and navy medical corps described the organization and management of physical therapy departments in military hospitals and the Veterans' Administration Facility.

Several reports by officers of the army and navy medical corps were concerned with the latest achievements in the armed forces in respect to the treatment of gonorrhea which is resistant to chemotherapy. These papers gave further evidence of the growing success achieved in shortening the period of treatment of this disease and in increasing the percentage of apparent cures even in resistant cases.

There were discussions of the possible effectiveness of disinfection by ultraviolet irradiation and discussion on refrigeration and hydrotherapy. Dr. Bayard T. Horton of the Mayo Clinic gave an interesting paper on cold allergy. He pointed out and emphasized the fact that many inexplicable drownings might be explained on the basis of this allergy.

On several occasions speakers underlined the increased importance of developing facilities for further training of medical officers and students in physical therapy. One of the major achievements of the year was reported as the growing number of schools established, and the increased enrollment of students for training in physical therapy technic. An appeal was made for more young women to train and to serve in the armed services in this important auxiliary medical service.

The interest of the medical departments of the military services was indicated by the fact that many medical officers from both the army and navy as well as physicians from the Veterans' Administration were present. Many young women in the uniforms of the physical therapy corps of the

army and aides from the navy medical corps also were present. Further evidence of growing interest in physical medicine was indicated by the fact that the lectures in the instruction courses conducted each day of the meeting, were well attended especially by members of the military service.

The medical profession of Chicago and the state of Illinois warmly welcomed those attending the American Congress of Physical Therapy at the formal opening session. The speakers on this occasion included Dr. Herman L. Kretschmer, President-elect of the American Medical Association; Dr. George W. Post, President of the Illinois State Medical Association; Dr. Oscar Hawkinson, President of the Chicago Medical Society; Dr. Raymond B. Allen, Dean of the University of Illinois College of Medicine; Dr. Stewart C. Thomson, Assistant Dean of the Loyola University School of Medicine; Dr. J. Roscoe Miller, Dean of Northwestern University Medical School and Major Joel I. Connally, representing the Mayor of Chicago, Edward J. Kelly.

At this session of the Congress Dr. Fred B. Moor of Los Angeles retired as President. Dr. Kristian G. Hansson of New York was inducted as President and Dr. Miland E. Knapp of Minneapolis became the new President-elect.

The American Congress of Physical Therapy was well attended and well organized considering the many limitations imposed by the war. The meeting is to be remembered for its great usefulness in strengthening the work of those who practice physical medicine in a period when utmost skill, wide knowledge and devotion are needed most by those who must be restored to normal or near-normal life as a result of the inevitable injuries and diseases which are bound to occur during wartime.

ADDRESS OF WELCOME TO THE 22ND ANNUAL CONVENTION OF THE AMERICAN CONGRESS OF PHYSICAL THERAPY

It is indeed a privilege to welcome you to Chicago, the home of the American Medical Association.

You are all familiar with the fact that the American Medical Association is deeply interested in physical therapy, through its Council on Physical Therapy, which was established in 1925 by action of the House of Delegates.

Need I remind you of the chaotic condition which existed in this field before the Council was established? There were offered for sale to the medical profession many nonmedical agents of alleged therapeutic value, such as electrical devices, mechanical devices and various kinds of lamps. At this time there was gross misrepresentation on the part of persons offering them for sale, and there was no way for the physicians to judge the merits of the apparatus that they were urged to buy.

I should like to call your attention to the aims of the Council:

To advise the public and the medical profession concerning the efficacy of apparatus recommended for medical purposes, and to protect them against fraud and misrepresentation in connection with the manufacture and sale of such apparatus.

To assist in the promotion of both undergraduate and postgraduate education in useful physical therapy measures.

To promote extension education in physical therapy through state, county and other medical societies.

To recommend and guide research in this field.

Since its inception, the Council has considered approximately five hundred pieces of apparatus, of which the vast majority have been accepted. Several

hundred are still under consideration. When the reports are sent to the manufacturer, in some instances the apparatus is withdrawn from the market; in most instances apparatus is improved, claims are revised and the report held in abeyance so as to give further time for study.

Interesting is the fact that more than one hundred mechanical nostrums have been refused consideration since they obviously had no therapeutic value.

During its period of activity the Council has investigated apparatus from air filtration units to ultraviolet radiation equipment. The Council has also had time to make the following contributions:

1. Official Rules of the Council on Physical Therapy.
2. Handbook on Physical Therapy.
3. Handbook on Amputations.
4. Manual on Physical Therapy.
5. Manual on Occupational Therapy.
6. Apparatus Accepted.

At this point you might well ask me what are the accomplishments of the Council on Physical Therapy. Among them I should like to mention that:

1. It has demonstrated the value of physical therapy to the medical profession.
2. It has endeavored to limit quackery in physical therapy.
3. It has limited instruction of physical therapy by physicians of questionable character.
4. It has raised the standard of research in the field of physical therapy.

You may be interested in some of the outstanding advances in therapeutics that have been made in the last seventeen years, in the development and acceptance of which the Council on Physical Therapy has been a factor:

1. Continuous artificial respiration (Drinker respirator).
2. Oxygen therapy, treatment of pneumonia.
3. Fever therapy.
4. Ice refrigeration for amputations.
5. New emphasis on physical therapeutic methods in the treatment of poliomyelitis.

Last but not least, may I call your attention to the fact that the Council consists of twelve physicians, all of whom serve without compensation? This is your Council. I am sure that all of you feel proud of its work and accomplishments.

All of the facilities of the Council are at your disposal, and we of the American Medical Association hope you will avail yourselves of them as often as the occasion may arise in your work.

HERMAN L. KRETSCHMER, M.D.,

President-Elect, American Medical Association.

INFRA-RED TREATMENT OF ELECTRIC OPHTHALMIA

Recently infra-red radiation has been advocated as successful treatment of "flash" burns of the eye due to overexposure to ultraviolet emanation, the usual source being the welders' arc. The practice is at present being evaluated by competent observers. The Joint Committee on Industrial Ophthalmology of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology believes that a word of warning is warranted about the practice until additional supporting evidence is available. The harmful effects of any forms of radiation on the eye are sufficiently well known to suggest that physicians who treat flashed eyes refrain from using infra-red lamp treatment until the results of the present research work are made available. — *J. A. M. A.* 122:1128 (Aug. 14) 1943.

MEDICAL NEWS

Baruch Committee to Survey Physical Therapy

Mr. Bernard M. Baruch, philanthropist and eminent economic adviser to our national government, announced on October 13, 1943, that a survey of the field of physical therapy to widen its usefulness "as a preventive and as a cure for human ills" would be made by a group of physicians selected by him.

Dr. Ray Lyman Wilbur, chancellor of Stanford University, California, was chosen by Mr. Baruch to serve as chairman. In a letter to Dr. Wilbur Mr. Baruch said that: "In view of the many wounded, I know you will give special consideration to reconstruction and occupational therapy."

Mr. Baruch said he had been impressed by his father, Dr. Simon Baruch, with the possibilities of physical therapy as a preventive and cure for human ills.

In listing the members of the committee Mr. Baruch wrote that the vice-chairman would be "Dr. W. T. Sanger, President of the Medical College of Virginia, from which my father was graduated in 1862 to become a surgeon in the Confederate Army." The other members of the committee are: Dr. Carl R. Comstock, Saratoga Springs, N. Y.; Dr. John S. Coulter, Chicago, Ill.; Dr. Kristian G. Hansson, New York, N. Y., and Dr. Frank H. Kruisen, Rochester, Minn.

The representatives from the Army and Navy are Lieut. Col. Benjamin A. Strickland, Jr., Army Medical Corps and Dr. Charles F. Behrens, Naval Medical Center, Bethesda, Md.

Mr. Baruch's letter said, "the Dr. Simon Baruch Foundation will pay from time to time such sums as you may indicate to the extent of \$25,000."

(Editor's Note: This late news item, abstracted from the New York Times for October 14, 1943, was of such importance that we hastened to include it in the current issue of the Archives. This committee may well become a powerful force in the amazing development of physical therapy which we can now predict. We wish the members of the committee success in an endeavor to raise our important field of medicine to new heights of scientific achievement.)

Officers for 1944

American Congress of Physical Therapy

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New York

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* In Active Service.

Dr. Watkins to Serve on Editorial Board of Archives

Dr. Arthur L. Watkins of Boston has been appointed to serve on the editorial board of the ARCHIVES OF PHYSICAL THERAPY during the absence of Major Walter M. Solomon (MC), who is on active military duty.

Society of Physical Therapy Physicians New Officers 1944

President — William H. Schmidt, M.D., Philadelphia.

President-Elect — Fred B. Moor, M.D., Los Angeles.

Vice-President — William D. Paul, M.D., Iowa City, Ia.

Secretary-Treasurer — Milton G. Schmitt, M.D., Chicago.

Membership Committee — Disraeli Kobak, M.D., Chicago; Nathan H. Polmer, M.D., New Orleans; Miland E. Knapp, M.D., Minneapolis; Madge C. L. Guinness, M.D., New York, N. Y.; Arthur L. Watkins, M.D., Boston, Mass.

Program Committee — Richard Kovács, M.D., New York, N. Y.; Charles R. Brooke, M.D., Newark, N. J.; Robert L. Bennett, M.D., Warm Springs, Ga.

Military Physicians at Congress Session

The twenty-second annual convention was well attended by military physicians. Every Service

Command except the Second and Third was represented by the Army and three Naval Districts by the Navy.

Perhaps the most interesting of the military presentations was the striking motion picture of Major Huddleston on Rehabilitation. He was one of the first to get the convalescent ward in operation.

The officers who attended the convention were grateful for the opportunity to discuss their departmental problems with each other, and almost everyone gained useful information to apply at their station.

It is hoped that military physicians in charge of physical therapy will begin collecting data now for presentation next year.

Dedication of Woodrow Wilson General Hospital

The U. S. Army Woodrow Wilson General Hospital at Staunton, Va., was formally dedicated on September 1. Among the speakers on the program were Major General Norman T. Kirk, Surgeon General of the Army; Major General Milton A. Reckord, commanding general of the Third Service Command, and Hon. Major A. Willis Robertson, Member of Congress of the Seventh Virginia District. The 1,500 bed hospital, which was named in honor of Staunton's distinguished son, Thomas Woodrow Wilson, the twenty-eighth President of the United States, is of brick construction and is located in the Shenandoah Valley, about 6 miles east of Staunton.

Major Ben L. Boynton, is chief of the physical therapy section of the surgical service.

Opportunity Offered Enlisted WACS to Become Physical Therapy Aides

Opportunity for qualified enlisted members of the Women's Army Corps to become Physical Therapy Aides, serving in the Medical Department of the Army of the United States with the relative rank of second lieutenant, is announced by the War Department.

Training courses in physical therapy for qualified enlisted WACS will begin in October under the direction of the Surgeon General, who will select the WAC personnel to be trained. On successful completion of the study and three months' practice, the WACS will be discharged from the Women's Army Corps and will be appointed as Physical Therapy Aides.

To be eligible, applicants must be under 44 years of age, must have completed the WAC basic training and must have a degree in physical education or two years of college study emphasizing the biological sciences.

Successful applicants will receive six months training in physical therapy in classes at universities and hospitals. On completion of those studies, they will be assigned to selected Army hospitals for practical experience in the treatment of wounded soldiers. The first groups selected will be sent to Leland Stanford University at Palo Alto, California; the University of Wisconsin at Madison, Wisconsin, and the D. T. Watson School of Physical Therapy at

the University of Pittsburgh. They will be trained at Government expense and be quartered on or near the university campuses. It is expected that Walter Reed General Hospital, Washington, D. C., and other Army general hospitals will participate in the training later.

Physical therapy is a major part of the rehabilitation program for the war wounded. During the last war Physical Therapy Aides worked with the Army as civilians, both in this country and overseas. A military status in the Army Medical Department was authorized recently for persons doing this work. Major Emma E. Vogel is the Director of Physical Therapy Aides.

Physical therapy employs massage, exercise and various forms of heat and other externally applied treatment. Understanding of such subjects as physiology and anatomy, as well as skill in the application of such treatments, are required of Physical Therapy Aides.

Dr. Frances Hellebrandt to Direct Physical Therapy at Wisconsin

Dr. Frances Hellebrandt has recently been made Associate Professor of Physical Medicine at the University of Wisconsin Medical School. Dr. Hellebrandt has also been appointed Director of the courses in physical and occupational therapy.

Pennsylvania Academy of Physical Medicine

The first Fall meeting of the Pennsylvania Academy of Physical Medicine will be held in the Philadelphia County Medical Society Building, Tuesday, October 19, at 9 p.m., the subject War Rehabilitation. The speakers and their subjects are as follows: "Rehabilitation of War Injuries," Major Spencer T. Snedaker, (MC), U. S. A.; "Physical Therapy and Rapid Rehabilitation," Capt. William Tipton, (MC), U. S. A., and "Wartime Physical Reconstruction," Frank H. Krusen, M.D., Mayo Clinic, Rochester, Minn.

In the future the meetings will be held on the third Thursday of alternate months.

Short Wave Diathermy Tubes Now Easier to Obtain

The War Production Board has announced that because of the fact that certain very fine radio tubes are rejected for communications purposes by the Army engineering corps because of slight irregularities, radio tubes still entirely suitable for diathermy are available. Also, it is interesting to find that it is possible now to have short wave diathermy tubes rebuilt so that they can be used for at least another year of service.

With tubes more easy to get and with the possibility of rebuilding radio tubes, the physicians' diathermy problem should be pretty well solved. There is every evidence that despite the vicissitudes of war, physicians are going to be able to obtain the instruments of their profession.

Conference of Medical Corps Officers

A three-day conference of medical corps officers from all over the country was held recently

at Jefferson Barracks, Missouri. The purpose of this conference was to make them familiar with their newly assigned duties as inspectors for the AAF Convalescent and Rehabilitation Training Program under the direction of Lieut. Col. Howard A. Rusk, Office of the Air Surgeon, Washington, D. C. This program is now functioning in the AAF regional hospitals at West Palm Beach and Coral Gables, Fla.

Fremont Chandler Named Professor of Orthopedic Surgery

Dr. Fremont A. Chandler, associate professor of orthopedic surgery at Northwestern University Medical School, has been appointed professor of orthopedic surgery and head of the department at the University of Illinois College of Medicine. Dr. Chandler will also be director of the Illinois Surgical Institute for Children. He succeeds Dr. Henry B. Thomas, who is retiring at the university after an affiliation since 1909. Dr. Thomas was instrumental in establishing the surgical institute for children which opened for patients in May, 1931.

Scholarships

Reader's Digest has awarded three scholarships for study on the Kenny method in poliomyelitis in the University of Minnesota to Miss H. Rodriguez Brizuela, Miss J. E. Stella and Dr. Julio R. Calcamari. The scholarships were awarded through the Department of Public Health of Argentina and the Instituto Cultural Argentino.

Society for Research in Psychosomatic Problems

Information has just been received concerning the first annual meeting of the American Society for Research in Psychosomatic Problems held in Detroit in May, at which Dr. Winfred Overholser, Washington, D. C., was named president-elect.

Kenny Treatment of Poliomyelitis

An epidemic of poliomyelitis has existed for several months in Buenos Aires. A committee consisting of Dr. Rutherford L. John, associate professor of orthopedic surgery of the University of Pennsylvania School of Medicine, and two nurses recently arrived in Buneos Aires for the purpose of teaching the application of the Kenny method. Practical sessions for teaching the application of the method were held in the Hospital de Niños and the Muñiz Hospital of Buenos Aires. Large numbers of South American physicians, surgeons and orthopedists were present. Dr. John was especially invited to give lectures to the Argentine societies of pediatrics and orthopedic surgery.

Eve's Rocking Method of Artificial Respiration

In 1932 Dr. F. C. Eve of Hull, England, described a new method of artificial respiration which, unlike all previous methods, works by the force of gravity. Eve points out that Schafer based it on experiments on the normal subject on whom it works well, and his claim holds that when the pressure on the chest is relaxed the same volume of air as that expelled must pass in again. But in cases of drowning—the principal contingency for which artificial respiration is used—the inspiratory recoil may be lost. The lack of elasticity is due to loss of tone in the diaphragm, which has become flaccid. In some countries Sylvester's method is preferred because the bony thorax has some resilience apart from muscle tone. Schafer's method relies on tone; Eve's method is independent of tone.

In Eve's method the victim of drowning is laid face downward on a stretcher and is well wrapped with blankets above and below. His wrists and ankles are lashed to the handles. Then he is hoisted on a trestle or sling and rocking is begun. The first tilt should be head down and steep (50 degrees) and should produce full expiration by the weight of the abdominal contents pressing on the diaphragm. It will also force aortic blood through the coronaries and empty the stomach and lungs of water. Then full inspiration is produced by tilting the foot end down to 50 degrees. The rocking is done a dozen times a minute through an angle of 45 degrees each way. During any delay in getting the stretcher it is recommended that Schafer's method be used until the rocking can be started.

Mr. R. Watson-Jones Transfers to London

Mr. R. Watson-Jones, orthopedic surgeon, of Liverpool, is to transfer to London. He has accepted the invitation of the London Hospital to join the honorary staff as director of the new Accident and Orthopedic Department. The transfer to London of provincial surgeons has always been a very rare event.

Medical Motion Pictures

Physical Therapy

Medical motion pictures are available on a loan basis from the American Medical Association to medical societies, medical schools, hospitals and other scientific groups. Requests should be instituted as far in advance as possible, so that the proper reservation can be made. The exact shipping addresses and dates should be given at the time of the request; also the type of apparatus in which the film is to be run. Responsibility for the projection and care of the film must be borne by the individual or organization which is borrowing it. The American Medical Association does not have projectors available for loan.

The only expense incurred is that of transporta-

tion both ways. However, careless handling resulting in serious damage may be charged to the borrower.

Requests should be sent to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago 10.

Aids in Muscle Training.—

Silent. 16 mm., 1 reel, 300 feet.

Running time about 12 minutes.

Demonstration of sling suspension exercises for the upper and lower extremities, graded exercises on a powdered board for the lower extremities and three kinds of "walkers" for reeducation exercises.

Prepared by the Council on Physical Therapy, American Medical Association, 535 North Dearborn Street, Chicago.

Contraction of Arteries and Arteriovenous

Anastomoses.—

Silent. 16 mm., 1 reel, 250 feet.

Running time 10 minutes.

This film visualizes the contraction of arteries and arteriovenous anastomoses as seen through a glass chamber installed in a rabbit's ear.

Prepared by Dr. E. R. Clark, University of Pennsylvania School of Medicine, Philadelphia.

Effects of Heat and Cold on the Circulation of the Blood.—

Silent. 16 mm., 1 reel, 300 feet.

Running time 12 minutes.

Demonstration of the effect of heat and cold on circulation as seen through a glass chamber installed in a rabbit's ear.

Prepared by Dr. E. R. Clark, University of Pennsylvania School of Medicine, Philadelphia.

Effects of Massage on the Circulation of the Blood.—

Silent. 16 mm., 1 reel, 200 feet.

Running time 8 minutes.

Demonstration of the effect of massage on circulation as seen through a glass chamber in a rabbit's ear.

Prepared by Dr. E. R. Clark, University of Pennsylvania School of Medicine, Philadelphia.

Massage.—

Silent. 16 mm., 1 reel, 100 feet.

Running time 4 minutes.

Demonstration of technic of massage, describing the various movements and why they are performed in a given way.

Prepared by the Council on Physical Therapy, American Medical Association, 535 North Dearborn Street, Chicago.

Occupational Therapy.—

Silent. 16 mm., 1 reel, 300 feet.

Running time 12 minutes.

This film demonstrates occupations that may be prescribed by physicians to motivate and control the desired physical or mental activity of the patient and assist in his adjustment to long hospitalization. A section on cerebral palsy is included, picturing indirect muscle training through prescribed activity and stressing the importance of early treatment to prevent growth of faulty habit patterns.

Prepared by the Council on Physical Therapy, American Medical Association, 535 North Dearborn Street, Chicago.

Underwater Therapy.—

Silent. 16 mm., 1 reel, 400 feet.

Running time about 16 minutes.

Presentation of therapeutic use of large and small pools, Hubbard tanks and home made tanks, and demonstration of types of exercises given in cases such as infantile paralysis, cerebral palsy and post-operative congenital dislocation of the hip.

Prepared by the Council on Physical Therapy, American Medical Association, 535 North Dearborn Street, Chicago.

Mexican Congress on Cancer

The first week of November has been selected for the First Mexican Congress on Cancer, to be held at Guadalajara, Mexico.

American - Soviet Medical Society President Honored by Russian Academy of Sciences

Dr. Walter B. Cannon, President of the American-Soviet Medical Society, was inducted as a member of the Academy of Sciences of the U. S. S. R. at a reception given in his honor by the Soviet Embassy on August 12th. Dr. Cannon, who is professor emeritus of physiology at Harvard, is the first American to be a member of both the Academy of Sciences of the United States and that of the U. S. S. R.

In conferring the honor, the Academy of Sciences of the U. S. S. R. stated that they were "profoundly confident that the hour is not far off when we Russian, British, and American scientists and our colleagues in other countries will meet at an international congress to share scientific achievements which will have helped bring back peace and freedom to humanity."

The American-Soviet Medical Society which Dr. Cannon now heads has been organized to stimulate the exchange of medical information between this country and the Soviet Union. Dr. Cannon has done much to encourage this exchange. A paper he delivered several years ago before the International Congress of Physiologists in Moscow met with great acclaim.

The national headquarters of the society are at 130 West 46th Street in New York City. *The American Review of Soviet Medicine*, its publication, maintains editorial offices at 1900 East Monument Street in Baltimore.

Two other American scientists, Dr. Ernest O. Lawrence, professor of physics, and Dr. Gilbert N. Lewis, professor of chemistry, both at the University of California, are being similarly honored.

National Foundation Aid Checking Nation's Polio Epidemic Toll

Despite the fact that poliomyelitis outbreaks this year have reached serious proportions, never before in the history of the National Foundation have we been able to bring to bear against the

epidemic enemy such a vast proof of "fire-power"—of skilled workers, equipment and money with which we are prosecuting our home front battle.

For the mitigation of the ravages of poliomyelitis, its victims may well thank the American people whose contributions to our Annual Appeals have made possible this ever-increasing effectiveness of our work.

1. *The epidemic picture:*

Significant of the severity of this year's outbreak of polio is the fact that according to official figures California and Texas combined reported more cases of infantile paralysis through the week ended August 28 than the entire number of cases reported for all 48 states through the week ended August 29, 1942.

As of August 28 this year there were 4,932 cases reported in the United States. During the comparable period last year the total was 1,707.

Statistics reveal that as of August 28 this year California had 1,237 cases against 84 for a similar period last year; Texas, 879; against 57 in 1942; Oklahoma, 354 compared with 11; Kansas, 330 against 19; Connecticut, 154 this year, 16 in 1942.

The Chicago Health Department and the Cook County Health Unit (Ill.) reported a total of 532 cases for that area through September 2 which is in excess of the number of cases in the entire State of Illinois as reported for the year ended December 31, 1942 by the United States Public Health Service.

2. *What we have done about it:*

The moment the outbreaks occurred, our Chapters in the epidemic areas, under the guidance of the National Foundation and working in close cooperation with state and local health authorities, rendered immediate aid to the victims.

Basil O'Connor in a nation-wide radio address, July 30, and in letters sent to all Chapters in the affected areas stressed the importance of Chapters using their funds freely for the relief of infantile paralysis victims and announced that the National Foundation would advance the necessary money should any Chapter exhaust its funds while serving its area. Chapters in Texas and Oklahoma which needed that type of assistance were granted the money promptly and the Foundation reiterated its assurance to all Chapters that its full resources were pledged to cope with the epidemic.

In California, the San Francisco County Chapter allocated \$12,000 through National Foundation auspices, to open up and staff a new ward in the Children's Hospital, San Francisco. Several Oklahoma Chapters pooled their funds to provide medical and hospital care for patients in Oklahoma City, Tulsa and Clinton.

As the incidence rate rose, the National Foundation was deluged with requests to supply physical therapy technicians, respirators, apparatus of all kinds to the stricken areas. Under the guidance of Medical Director Don W. Gudakunst, this work went forward at full speed—despite wartime inroads on such personnel and equipment.

Physical therapy technicians were "borrowed" from non-affected areas to serve in the epidemic

sectors. The names of some of these technicians and the states to which they were sent follow:

California. — Miss Carrie Campbell (N. Y. Post-Graduate Hospital), Miss Eloise Draper (Westchester County Chapter, N. Y., and Miss Betty Taylor (Georgia Warm Springs Foundation) reported to the California Department of Public Health for duty in various areas in the state. Miss Beatrice Vlahos (of our staff) went to Bakersfield to work under Dr. William C. Buss, Kern County Health Department; Miss Helen Johnstone was borrowed from the Minneapolis Curative Workshop by Stanford University, School of Health (Women) (Cal.) for an emergency teaching program.

Kansas. — Miss Mary Bassett (Essex County Isolation Hospital, N. J.) reported to Mr. Wesley Brown, Chairman of the Reno County Chapter (Kan.); Miss Carolyn Bowen (Boston Visiting Nurse Association) reported to Dr. F. C. Beelman, State Health Officer, Topeka; Miss Katherine Ott (Indiana Board of Public Welfare) reported to Bell Memorial Hospital, Kansas City; Mrs. Alice Pelusio (Newark City Hospital, N. J.), Miss Carol Rice, Miss Jane Thompson, (Detroit Visiting Nurse Association) reported to Dr. Paul C. Carson, Wichita.

Oklahoma. — Miss Caroline Earl (Georgia Warm Springs Foundation) reported to the Crippled Children's Hospital and later was transferred to Chicago. Mrs. Lulu MacMurchie was sent from Minneapolis to the Commission for Crippled Children; Miss Josephine Moyses (of our staff) reported to Mrs. Ruby DeWitt, Chairman of the Tulsa County Chapter; Miss Elizabeth Nigh was borrowed from the Indiana Department of Public Welfare; Miss Meredith Nordschow was secured by the Oklahoma Commission for Crippled Children, from Iowa Methodist Hospital, Des Moines.

Texas. — Miss Wanda Hilliker (Georgia Warm Springs Foundation) reported to Dr. W. B. Carrill, Dallas; Miss Helen Vaughan (Georgia Warm Springs Foundation) reported to Mr. W. M. Massee, Chairman of the Tarrant County Chapter, Fort Worth, as did the Misses Vivian Hannon, Ruth Swanson and Ruth Pulling; Miss Elizabeth Masola (Milwaukee Visiting Nurse Association) went first to the Crippled Children's Hospital at Corpus Christi, then was transferred to the Northwest Texas Hospital at Amarillo.

Illinois. — In addition to Miss Earl, who was transferred from Oklahoma to Chicago's Municipal Contagious Disease Hospital, Miss Jessie Waddell also is working in the Cook County area. Additional technicians are being secured.

Connecticut. — As yet no requests for technicians have been received from New Haven which has had the greatest incidence of polio in that state.

In practically all cases where these technicians have been "borrowed," salaries or travel expenses or both have been borne by either the National Foundation or the Chapters requesting such technical aid.

Respirators have been dispatched from non-epidemic areas to those where the outbreaks have

occurred while other respirators have been stationed at strategic points throughout the country. More than 7,000 pounds of wool have been shipped to the stricken areas for use in the hot pack phase of the treatment of polio. Over 15,000 pieces of National Foundation literature, the content dealing particularly with problems inherent during the epidemic season, have been distributed during the past few weeks to state and local health departments, hospitals and Chapters in the affected areas.

Meanwhile, National Foundation grantees continue their epidemiological investigation in the field. Among them are Drs. H. E. Pearson and Thomas Francis, Jr., School of Public Health, University of Michigan; David Bodian and Howard A. Howe, The Johns Hopkins University, School of Hygiene and Public Health; William McD. Hammon, George Williams Hooper Foundation, University of California; Joseph L. Melnick and Robert Ward, Yale University School of Medicine.

Regional Directors, Warren D. Coss, Miss Ruth Williams and Edgar D. Davis also are doing fine work in expediting the solution of countless problems that arise.

We may well be proud of the work we are doing in checkmating infantile paralysis but back of that pride dwells an intense and unswerving determination to press this fight harder and still harder until final victory is claimed. — *National Foundation News*.

The American Way

The word "neighbor" has always held a unique place in the minds of Americans. It means more than a word describing the man who lives next door, or three miles down the road at the next farm. It transcends community, county or state lines.

Throughout the United States it means that when help is needed, neighbors offer it freely and promptly.

No more graphic illustration of true neighborliness can be found than in the manner in which hospitals, health departments and agencies, and our Chapters responded when they were asked to "lend" physical therapy technicians to the epidemic areas.

California, Texas, Oklahoma, Washington, Colorado and Kansas sent urgent calls for these skilled workers. Immediately communities in Georgia, New Jersey, New York, Wisconsin, Indiana, Iowa, Michigan and other states released as many technicians as could possibly be spared.

The sending of these physical therapy technicians to other locales represented a genuine sacrifice on the part of their home communities, but should epidemics strike those communities these technicians will be recalled and their skill will be amplified by the skills of additional physical therapy technicians sent by "neighbor" states throughout the country. It is the American way. — *National Foundation News*.

Cease and Desist Orders—Abstracts of Certain Federal Trade Commission Releases

The work of the Federal Trade Commission, in helping to protect the public against misrepresentation or fraud in the medical as well as other fields, has been greatly extended by the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act. The Food, Drug and Cosmetic Act of 1938 added to the Food and Drug Administration's control of the advertising claims and statements made on the label of a medicine or on the carton or in the accompanying leaflet, whereas what might be termed collateral advertising, that which appears in circulars, newspapers and magazines and over the air, comes more actively under the purview of the Federal Trade Commission by virtue of the Wheeler-Lea Amendment.

The Journal has at various times commented on the activities of the Federal Trade Commission in this connection, even before the Wheeler-Lea Amendment gave it its added rights. In some cases the Commission may accept from the person or concern involved a stipulation that the objectionable practice or claims cited will be discontinued. In other cases the Commission issues what is known as a Cease and Desist Order, in which the individual, manufacturer or distributor cited is ordered to cease and desist from practices which have been declared objectionable. In some cases the claims cited have been discontinued by the firms several months (or even longer) before the issuance of the order. Abstracts of some of the orders issued in 1942 follow in this form: name of product, name of distributor, date of issuance of complaint, date of issuance of Cease and Desist Order and terms of order.

Electro-Health Short Wave Diathermy. — Electro-Health Appliance Company, Los Angeles; complaint issued June 12, 1941; order issued Nov. 10, 1942. Order directed the concern to discontinue any advertisement which represented that the device is harmless and constitutes a competent treatment for the various ailments mentioned in the advertising, or any other disorder, unless specifically limited to cases in which no acute inflammatory process is involved and in which the application of heat is not likely to induce hemorrhage; or any advertisement which fails to reveal clearly, conspicuously and unequivocally that the device is unsafe to use unless a competent medical authority has determined, as a result of diagnosis, that the use of diathermy is indicated, and has prescribed the method of such treatment and the user has been thoroughly instructed by a physician or trained technician in the use of the device.

Hollywood Magic Garment. — Hollywood Magic Garment Company, Los Angeles, complaint issued Feb. 11, 1942; order issued Jan. 26, 1943. Order prohibited dissemination of any advertising which represented that this degree constitutes an effective method for the removal of excess flesh

or weight or that it is in all cases safe to use. This order was based on the findings of the Commission that the garment in question, made of rubberized cloth which fits tightly about the neck, wrists and ankles, induces perspiration and thus causes the body to lose substantial quantities of water, salt, and consequently weight. The findings continue, however, that the effect is only temporary, since the wearer of the garment, because of thirst produced by the amount of water lost, must proceed almost immediately to drink a quantity of water or other liquid with the result that the weight of the body becomes about the same as it was before the process was begun. The Commission also found "that the device cannot be properly regarded as safe in all cases as its use may raise body temperature to such a point that heat exhaustion will follow and it should never be used in the presence of any serious pathological condition when the debilitating effect of the loss of fluid and salt from the body would be distinctly detrimental."

Pescor Shortwaveratherm. — Physicians Electric Service Corporation, manufacturer, Solomon E. Mendelsohn, officer, and the May Department Store Company, sales agent, all of Los Angeles; complaint issued Jan. 31, 1942; order issued Oct. 27, 1942. Order prohibited further use of misrepresentations in the advertising of the product in question, a short-wave diathermic device, as follows: that the thing resulted from years of diligent engineering research and incorporated "safety features"; that physicians prescribe and recommend short-wave diathermy in many ail-

ments (of which more than 40 were named in the advertising); that even the unskilled lay public can use this device in the treatment of self-diagnosed diseases and ailments by individual self-application in the home and that it will prove a scientific, harmless and effective method of relieving or curing arthritis, sinus infection, lumbago and other conditions. — *J. A. M. A.* 123:111 (Sept. 11) 1943.

Douglas Aymar Cater 1869-1943

It is with regret that we announce the death of Dr. Douglas A. Cater of East Orange, N. J. Dr. Cater was graduated from the Columbia University College of Physicians and Surgeons, New York in 1896, was licensed in New York in 1899, was a Fellow of the American College of Surgeons, consulting physical therapist and member of the staff of the Orange Memorial Hospital. He was for many years a member of the American Congress of Physical Therapy.

Frank E. Hill, 1862-1943

Announcement is made of the death on July 15, of Dr. Hill, in Muncie, Indiana. A Fellow and member of the American Medical Association, Dr. Hill, received his medical education at the Medical College of Ohio, graduating in 1890. He has long been a member of the American Congress of Physical Therapy.

Ultraviolet and the War — Anderson, Jr.

(Continued from page 597)

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2. Prager, T., and Wilkinson, M. J.: The Industrial Front in Germany, abstracted from "Labour Management" (London), January, 1942, in *Industrial Med.* 2:142 (March) 1942.
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4. Ponten, J.: *Industrial Welfare*, Jan., 1940.
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6. Keefer, Chester S.: Control of Common Respiratory Infections, *J. A. M. A.* 121:802 (March 13) 1943.
7. Sherman, J. B.: Investigations Into Treatment of Common Cold by Infra-red Irradiation, *Brit. J. Phys. Med.* 1:356 (Oct.) 1938.
8. Robertson, Elizabeth C.; M. Elizabeth Doyle, and Tisdall, F. F.: Ultraviolet Radiation in Reduction of Respiratory Cross Infections, *J. A. M. A.* 121:908 (March 20) 1943.
9. Spline, Robert E.: The Workers' Welfare, *Indust. Med.* 2:68 (Feb.) 1942.
10. Furniss, Austin: Some Notes on the Prevention and Treatment of Influenza and Pneumonia by Means of Ultraviolet Light, *Med. Press* 194:182 (Feb. 24) 1937.

FINANCIAL REPORTS

Report on Examination for the Year Ended December 31, 1942

June 16, 1943.

American Congress of Physical Therapy,
30 North Michigan Avenue,
Chicago, Illinois.

Dear Sirs:

We have examined the balance sheet of the American Congress of Physical Therapy as of December 31, 1942, and the summary of net income and surplus for the year ended that date, have reviewed the accounting procedures of the Congress and, without making a detailed audit of the transactions, have examined or tested accounting records of the Congress and other supporting evidence by methods and to the extent we deemed appropriate, and except as stated in the following paragraph.

In an organization of this size it is not practicable to maintain the accounting staff which would be required to insure complete control over the sources of income. We tested the correctness of the income recorded on the books by reference to available supporting details, but we did not make the complete verification of the income accounts which would be required in order to certify to the correctness thereof without qualification.

The space, personnel, and facilities of the general office of the American Congress of Physical Therapy are also used by the American Registry of Physical Therapy Technicians, an affiliated organization. It has been the practice of the Congress to pay the general office expenses and to charge the Registry for a portion thereof based, in general, on the activities of the two organizations.

During the year ended December 31, 1942, the American Congress of Physical Therapy billed prorated expenses to the American Registry of Physical Therapy Technicians in the aggregate amount of \$3,192.61. In the preceding year prorated expenses billed to the Registry aggregated \$2,354.97.

In our opinion, subject to the foregoing, the accompanying balance sheet and summary of net income and surplus fairly present, in conformity with generally accepted principles of accounting applied on a basis consistent with that of the preceding year, the financial position of the Congress at December 31, 1942, and the results of its operations for the year ended that date.

We submit the following exhibits and schedules:

Exhibit —

A — Balance Sheet, December 31, 1942.

Schedule —

1 — Accounts Receivable — Advertisers and Exhibitors.

2 — Accounts Payable — Trade Creditors.
B — Summary of Net Income and Surplus for the Year Ended December 31, 1942.

Schedule —

1 — Direct Convention Expenses.

In addition, we submit the following comments:

OPERATIONS

The operations for the year ended December 31, 1942, resulted in net income of \$4,770.74, as detailed in the accompanying Exhibit B and its supporting schedule. This compares with net income of \$581.27 for the year ended December 31, 1941, an increase of \$4,189.47, which is accounted for as follows:

Increases (decrease*) in income:

Dues	\$ 48.00
"Archives"	773.07
Convention — net.....	238.30*
Miscellaneous	301.80
	<u>\$ 884.57</u>

Net increase in income..... \$ 884.57

Decreases in expenses:

Office salaries	\$1,476.70
Office expenses — rent, light, postage, etc.	139.51
Dr. Disraeli Kobak Fund....	625.00
Printing "Archives" and cuts, half tones, etc.	197.40
Other expenses — net.....	156.52
	<u>2,595.13</u>

Net decrease in expenses.. \$ 2,595.13

Increase in income credit — reduction of provision for doubtful accounts applica- ble to prior years.....	709.77
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Increase in net income for the year	<u>\$4,189.47</u>
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The net decrease of \$2,595.13 in expenses is accounted for as follows:

Increase in office expenses charged to the Registry: Office salaries	\$903.75
Less decrease in other office expenses	66.11
	\$ 837.64
Decrease in other expenses.....	1,757.49
Total	<u>\$2,595.13</u>

It will be noted from the foregoing that the decrease in expenses, after giving effect to the increase in expenses charged to the Registry, was \$1,757.49. Of this amount, \$572.95 represents a decrease in office salaries, \$625.00 a decrease in payments for the Dr. Disraeli Kobak Fund, and \$559.54 in other expenses.

WORKING CAPITAL

The working capital of the Congress at December 31, 1942, was as follows:

Current assets, represented by cash of \$4,475.53, net accounts receivable of \$2,049.15, and a deposit of \$12.75.....	\$6,537.43
Current liabilities, represented by accounts payable	422.53
Working capital — excess of current assets over current liabilities.....	<u>\$6,114.90</u>

The working capital at December 31, 1942, was \$4,985.69 in excess of the working capital at December 31, 1941.

CASH — \$4,475.53

The cash balance at December 31, 1942, consisted of the following:

On deposit with the National Boulevard Bank of Chicago:	
Regular account	\$2,605.06
Special account	1,855.47
On hand — petty cash fund.....	15.00
Total	<u>\$4,475.53</u>

The cash on deposit was verified by a certification obtained from the depositary, and the petty cash fund was verified by count.

ACCOUNTS RECEIVABLE — NET — \$2,049.15
ADVERTISERS and EXHIBITORS — \$551.50

The accounts receivable from advertisers and exhibitors are detailed in the accompanying Schedule 1 of Exhibit A. The following is a summary of the balances which were paid during the period from January 1 to April 14, 1943 (date of our examination of the receivables), and the balances which were uncollected at the latter date, classified according to dates of billing:

Accounts collected from January	
1 to April 14, 1943.....	\$363.25
Uncollected accounts at April 14,	
1943, billed in:	
December, 1942	\$ 20.00
November, 1942	20.00
July, 1942	33.50
June, 1942	10.25
Prior to January 1, 1942.....	104.50
Total	<u>188.25</u>
Total	<u>\$551.50</u>

The debtors having outstanding accounts at December, 31, 1942, which were not paid at April 14, 1943, were requested to confirm their accounts as of March 31, 1943. At the date of writing of this report no exceptions had been taken to the amounts as shown by the books.

MEMBERS' DUES — \$1,186.00

The above amount represents dues for the years 1942 and 1943 billed to members, which were uncollected at December 31, 1942. All dues for the year 1942 which had not been collected at the date of our examination were written off.

AMERICAN REGISTRY OF PHYSICAL THERAPY TECHNICIANS — \$411.65

The amount of \$411.65 owing from the above-named organization represents the balance of office salaries and other office expenses charged by the Congress during the year. This amount was collected in full in January and February, 1943.

Following is a comparison of the office expenses charged to the Registry during the years 1942 and 1941:

	1942	1941	Increase Decrease*
Salaries	\$2,217.75	\$1,314.00	\$903.75
Rent	435.00	435.00	
Postage	300.00	300.00	
Directory	152.00	152.00*	
Light	70.01	53.91	16.10
Telephone & telegraph	60.51	62.07	1.56*
Office supplies	106.84	37.99	68.85
Miscellaneous	2.50		2.50
Total	<u>\$3,192.61</u>	<u>\$2,354.97</u>	<u>\$837.64</u>

Included in salaries charged for the year 1942 are amounts aggregating \$79.64 representing a portion of the salaries of two employees for the months of November and December which were paid directly by the Registry. In previous months of 1942 and during the year 1941 all comparable salaries were paid by the Congress, and in order to present a proper comparison, such salaries are shown as having been prorated to the Registry by the Congress.

SOCIETY OF PHYSICAL THERAPY PHYSICIANS — \$100.00

The account receivable from the Society of Physical Therapy Physicians represents the share of office expenses of the Congress charged to that organization for the period from March 1 to December 31, 1942, at the rate of \$10.00 a month. The amount of \$80.00 was collected on this account in January, 1943.

RESERVE FOR DOUBTFUL ACCOUNTS — \$200.00

The changes in the reserve for doubtful accounts during the year under review are summarized as follows:

Balance, December 31, 1941.....	\$ 826.02
Provision for possible losses for the year	194.75
Total	<u>\$1,020.77</u>
Less:	
Members' 1942 dues which were not paid at April 14, 1943, and were written off as uncollectible	\$111.00
Reduction of provision made in prior years — credited to income	709.77
Balance, December 31, 1942..	<u>820.77</u>
	\$ 200.00

The accounts written off represented the accounts of twelve members.

The accounts receivable were reviewed with the Executive Secretary, Miss Marion G. Smith, and based upon this review and upon our examination of the accounts, we are of the opinion that the reserve for doubtful accounts is adequate.

ACCOUNTS PAYABLE — TRADE CREDITORS — \$337.53

The amounts due to trade creditors are detailed in Schedule 2 of Exhibit A. These accounts were paid in full in January, 1943. We did not request the trade creditors to confirm the balances shown by the books to be owing to them at December 31, 1942, but employed other means to satisfy ourselves that all accounts of consequences which were owing at December 31, 1942, were included in the above amount.

**DEFERRED INCOME — \$4,305.27
SUBSCRIPTION TO "ARCHIVES"—
UNEXPIRED PORTION — \$1,856.27**

The above amount represents the portion of subscriptions to "Archives" applicable to periods subsequent to December 31, 1942.

MEMBERS' 1943 DUES BILLED OR PAID IN ADVANCE — \$2,449.00

Members' dues for the year 1943 aggregating \$2,449.00 were billed prior to December 31, 1942, and will be credited to income in the year 1943. Of this amount, \$1,354.00 had been collected at December 31, 1942.

GENERAL

Adjusting journal entries to bring the records into agreement with the accompanying statements have been submitted informally.

Yours truly,

GEORGE ROSSETTER & CO.,
Certified Public Accountants,
First National Bank Bldg., Chicago.

Report on Examination for the Year Ended December 31, 1942

June 16, 1943.

American Registry of Physical Therapy,
30 North Michigan Avenue,
Chicago, Illinois.

Dear Sirs:

We have examined the balance sheet of the American Registry of Physical Therapy Technicians as of December 31, 1942, and the statement of net income and surplus for the year ended that date, have reviewed the accounting procedures of the Registry and, without making a detailed audit of the transactions, have examined or tested accounting records of the Registry and other supporting evidence by methods and to the extent we deemed appropriate, except as stated in the following paragraph.

In an organization of this size it is not practicable to maintain the accounting staff which would be required to insure complete control over the sources of income. We tested the correctness of the income recorded on the books by reference to available supporting details, but we did not make the complete verification of the income accounts which would be required in order to certify to the correctness thereof without qualification.

The space, personnel, and facilities of the general office of the American Congress of Physical Therapy are also used by the American Registry of Physical Therapy Technicians, an affiliated organization. It has been the practice of the Congress to pay the general office expenses and to charge the Registry for a portion thereof based, in general, on the activities of the two organizations.

During the year ended December 31, 1942, the American Congress of Physical Therapy billed prorated expenses to the American Registry of Physical Therapy Technicians in the aggregate amount of \$3,192.61. In the preceding year prorated expenses billed to the Registry aggregated \$2,354.97.

Dues are recorded as received by the Registry, and the accompanying balance sheet does not include dues billed but uncollected at December 31, 1942.

In our opinion, subject to the foregoing, the accompanying balance sheet and statement of net income and surplus fairly present, in conformity with generally accepted principles of accounting applied on a basis consistent with that of the preceding year, the financial position of the Registry at December 31, 1942, and the results of its operations for the year ended that date.

Prior to January 1, 1940, the transactions of the Registry were recorded on the books of the American Congress of Physical Therapy.

We submit the following exhibits:

Exhibit—

A — Balance Sheet, December 31, 1942.

B — Statement of Net Income and Surplus for the Year Ended December 31, 1942.

In addition, we submit the following comments:

OPERATIONS

The operations for the year ended December 31, 1942, resulted in a net income of \$1,035.61, as detailed in the accompanying Exhibit B. This compares with net income of \$784.50 for the year ended December 31, 1941, an increase of \$251.11 which is accounted for as follows:

Increases in income:	
Dues	\$ 216.00
Registration fees	1,275.00
Other	193.37
Total increases in income..	<u>\$1,684.37</u>
Less increases in expenses:	
Office salaries	\$ 903.75
Office expenses — rent, light, postage, etc.	145.85
Examinations — supervision and marking	175.82
Traveling expense	180.00
Other expenses	27.84
Total increases in expenses	<u>1,433.26</u>
Increase in net income for the year	<u>\$ 251.11</u>

CASH — \$4,890.66

The cash balance at December 31, 1942, was on deposit with the National Boulevard Bank of Chicago and was certified by a certification obtained from the depositary.

ACCOUNTS PAYABLE — TRADE CREDITORS — \$201.13

We did not request the creditors to confirm the balances shown by the books to be owing to them, but employed other means to satisfy ourselves that all amounts of consequence which were owing at December 31, 1942, were included in the above amount.

ACCOUNTS PAYABLE — AMERICAN CON- GRESS OF PHYSICAL THERAPY — \$411.65

The amount of \$411.65 owing to the American Congress of Physical Therapy at December 31,

1942, represents the balance of office salaries and other office expenses charged by that organization during the year. This amount was paid in full during the months of January and February, 1943. Full particulars of the charges are contained in our report on examination of the American Congress of Physical Therapy for the year ended December 31, 1942.

DEFERRED INCOME — \$1,316.00 DUES COLLECTED IN ADVANCE — YEAR 1943 — \$986.00

The above amount represents dues collected at December 31, 1942, for the year 1943, and this amount is to be taken into income in 1943. It is the practice of the Registry to record dues as collected and not as billed, and the above amount does not include dues for 1943 which were billed but not collected at December 31, 1942.

DEPOSITS WITH APPLICATIONS — \$330.00

The above amount represents thirty-three deposits received with applications. These deposits are subject to refund if the applications are rejected. It is the practice of the Registry to take the deposits into income as the applicants take the examinations.

GENERAL

Journal entries necessary to bring the records into agreement with the accompanying statements have been submitted informally.

Yours truly,

GEORGE ROSSETTER & CO.,
Certified Public Accountants,
First National Bank Bldg., Chicago.



BOOK REVIEWS

RELIGION AND HEALTH. By *Seward Hiltner*, Executive Secretary, Commission on Religion and Health of the Federal Council of Churches. Cloth. Pp. 292. Price, \$2.50. New York: The Macmillan Company, 1942.

The author has made an important contribution to our knowledge of the relation of religion and health. The volume opens with a discussion of the rise of the mental hygiene movement. Mental hygiene is entering on the preventive phase of its development which is largely educational. Mental hygiene and religion can benefit mutually by cooperating in this educational effort both from the standpoint of prevention and of therapy.

A healthful interpretation of religion should make certain important contributions to the personality. Belief in a Supreme Being should impart a feeling of security and serenity. It should develop a sense of responsibility for the welfare of others. It should make the individual less dependent on mere culture or wealth, lending strength of character which will withstand material reverses, loss of friends and even persecution. One's religious interpretation should contribute to his mental, spiritual and physical health. It should help him to avoid tension by meeting adverse situations and disappointments calmly. It should help him to face the "irreducible mystery of life," that which science has been unable to explain.

A chapter of the work is devoted to a résumé of Christian medical missionary work in less enlightened lands during the past century and a half. This medical missionary endeavor is the outgrowth of Christian compassion for the unfortunate and the sick.

The author presents a stimulating discussion of psychosomatic factors in disease and the relation of religion to them. The importance of psychic influence in somatic disease is now generally recognized by modern physicians. The work of the Christian physician, nurse and social worker should be recognized as a spiritual ministry on a par with that of the minister.

The author stresses in one chapter the importance of the concepts of mental hygiene for the church school teacher. The teacher should be able to detect abnormal and unsocial behaviour in the child and to see that proper steps are taken to prevent the development of personality traits which may be a lifelong handicap.

Several chapters are devoted to the work of the minister in pastoral counseling. He should have sufficient knowledge of mental hygiene to be able to understand the psychologic situations presented to him. He should not, however, ordinarily attempt the correction of involved psy-

chologic problems but should refer them to the psychiatrist. He should be familiar with his community resources for the care of those physically and mentally ill, as such: physicians, psychiatrists, child welfare and public health agencies, guidance clinics and mental hospitals.

The ministry of the pastor to the sick and the work of the hospital chaplain are considered in the two final chapters. This volume is recommended to physicians who recognize the importance of psychosomatic factors in medicine and who are interested in the spiritual as well as the physical welfare of their patients. It is also highly recommended to church pastors as an aid in pastoral counseling.

DISEASES OF THE SKIN. By *Oliver S. Ormsby*, M.D., Rush Professor of Dermatology, University of Illinois; Attending Dermatologist to the Presbyterian Hospital of Chicago; Member of the American Dermatological Association and the American Academy of Dermatology and Syphilology; and *Hamilton Montgomery*, M.D., M.S., Associate Professor of Dermatology and Syphilology, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, Rochester, Minnesota; Associate in the Section on Dermatology and Syphilology, Mayo Clinic; Member of the American Dermatological Association; American Academy of Dermatology and Syphilology; Society for Investigative Dermatology. Cloth. Pp. 1360. Price, \$14.00. Philadelphia: Lea and Febiger, 1943.

In the sixth edition, this standard text book on dermatology remains one of the finest treatises on the subject. Much new material has been added and a large number of diseases have been regrouped in order adequately to cover the investigative work done in the field since preparation of the last previous edition. Two new classes of diseases have been added, obsolete material has been eliminated, several of the chapters have been rewritten and twenty-two diseases are described for the first time. Engravings added number 133 and these include 186 illustrations. Preceding the chapters in which the various diseases are described are several chapters devoted to subjects of great importance to the student of dermatology: anatomy and physiology of the skin; chemistry of the skin; general symptomatology of diseases of the skin, and pathology, diagnosis and therapeutics relative to skin diseases. The authors point out the extreme importance of careful study of these subjects because of the differences in the procedures used in studying diseases of the skin, as compared to those employed in studying other medical subjects. Each disease is described ac-

cording to the following outline: synonyms, definition, symptoms, etiology, histopathology, diagnosis, treatment and prognosis. The bibliography is extensive and its position at the bottom of each page of the book make reference to it convenient. The book, then, is well organized and the illustrations extensive and excellent.

Whereas the volume is thick, because of the large field discussed, it is an excellent tool for the student, the practitioner who is not primarily a specialist, or the specialist who needs a reference book.

METHODS OF TREATMENT. By *Logan Clendening*, M.D., Clinical Professor of Medicine, Medical Department of the University of Kansas; Attending Physician, University of Kansas Hospitals, and *Edward H. Hashinger*, A.B., M.D., Clinical Professor of Medicine, Medical Department of the University of Kansas; Attending Physician, University of Kansas Hospitals; Attending Physician, St. Luke's Hospital, Kansas City, Mo.: With chapters on special subjects by *J. B. Cowherd*, M.D.; *Leland F. Glaser*, M.D.; *Thomas B. Hall*, M.D.; *John S. Knight*, M.D.; *H. P. Kuhn*, M.D.; *Paul H. Lorhan*, M.D.; *F. C. Neff*, M.D.; *Don Carlos Peete*, M.D.; *Carl O. Rickter*, M.G.; *E. H. Skinner*, M.D.; *O. R. Withers*, M.D.; and *Lawrence E. Wood*, M.D. Eighth Edition. Cloth. Pp. 1033. Price \$10.00. St. Louis: C. V. Mosby Company, 1943.

The latest edition of this deservedly popular, excellent handbook by two distinguished medical teachers and their competent collaborators has been fully brought up to date by revision of the existing text and by the addition of many new sections. The two main parts of the volume are: General Therapeutics—the methods used in treatment and special therapeutics—the application of therapeutics to particular diseases. Thus not only all modern therapeutic procedures are brought together by critical selection and with comments within the compass of one volume, but their application to various diseases and the results to be expected also are fully expounded with frequent cross references. This is a practical plan, but, unfortunately not generally followed in other textbooks. Among the many new subjects introduced in the volume are: the treatment of intractable pain with cobra venom, bee venom, etc.; sciatica due to herniation of the nucleus pulposus; indications for surgery in hypertension; pneumococcic and influenzal meningitis; the Kenny method of treatment of poliomyelitis; vitamin K therapy in prothrombic deficiency; the new conceptions of fat metabolism and acidosis in diabetes as reported by Stadie and others; the use of newer glycosides of digitalis; and of the new insulin. Accounts of the new sulfa drugs have been added to the others and likewise the new vitamins have been described. The sections on physical therapy and spa therapy are ample and authoritative. This is a volume which should be at the elbow of every practicing physician who is anxious to give his patients the benefit of all standard and up to date methods of treatment.

KITCHEN STRATEGY: VITAMIN VALUES MADE EASY. By *Leona M. Bayer*, M.D., Assistant Clinical Professor of Medicine, Stanford University School of Medicine, San Francisco, and *Edith S. Green*, B.A. Paper. Price, \$1.50. Pp. 107, with illustrations by *Antonio Sotomayor*, San Francisco: The Author, 1943.

In the foreword Dr. Ernst Wolff, Chief of Pediatrics of the Mount Zion Hospital, San Francisco, calls attention to the fact that "just as the American mother and housewife was becoming acutely aware of the importance of good diet, the impact of the war made her problem at the same time immeasurably more difficult and more urgent to solve. Rationing and shortages so complicate the picture that only an easy going understanding of essentials can assure the skill necessary to plan adequate meals." The outline showing the usual dietetic routines for ordinary ailments is a most valuable section in the present emergency. Everywhere in civilian life there exists a shortage of physicians. The suggestions for handling the dietetic aspects of minor illnesses are safe and generally accepted. There is listed food preparation where little or no sugar is required; likewise where little or no butter is needed; substitutes for pastry cream and many other distinct and valuable aids to help combat wartime scarcities. There is a detachable chart of the protective foods to be used in planning daily and weekly menus. The book should serve to save the time of the busy physician and help to extend the assistance of the dietitian who also has gone in great numbers to serve with our armed forces.

FOOD POISONING. By *G. M. Dack*, Ph.D., M.D., Associate Professor of Bacteriology, The University of Chicago. Cloth. Price, \$2.00. Pp. 132. Chicago: The University of Chicago Press; London: Cambridge University Press, 1943.

In the preface to this monograph, the author points out that the term "food poisoning" is of necessity vague and that included in this category are illnesses resulting from ingestion of food containing certain inorganic chemicals. Among the causes of conditions known as food poisoning, also, are poisons derived from plants and animals and toxic products or infections caused by several species of bacteria. The disorders produced by such a diverse group of inciting agents do not present uniform syndromes and are variously classified.

In the introduction, the author says that there is still a tendency to obscure the causative agent under the blanket term of "ptomaine" poisoning. Therefore, he goes into considerable detail as to how to determine whether or not certain sudden outbreaks of illness are due to food poisoning. It is pointed out that often it is difficult to identify the causative agent in outbreaks of presumed food poisoning, owing to the difficulty in obtaining adequate histories and in making studies of the suspected food.

The book is divided on the basis of causative agents of food poisoning, with chapters on chemicals, poisonous plants and bacteria and their products and a miscellaneous group of illnesses of which the causes are unknown. The clinical and laboratory studies necessary to determinations of the types of food poisoning are discussed in considerable detail. The author concludes as follows: "Symptomatology, epidemiology, pathology, and laboratory diagnosis are all essential in establishing a correct diagnosis in any outbreak of food poisoning. They must all be included in an intelligent analysis of such an outbreak. Where all are not considered, specific agents may be falsely incriminated. In this book a critical discussion is given of the various agents which cause food poisoning, and it is hoped that the various similarities and distinctions which have been drawn will be helpful to individuals engaged in studying the numerous gastrointestinal upsets which may or may not be due to food poisoning."

The book is well organized and written and should be of interest to general practitioners, dietitians, public health officers, bacteriologists and epidemiologists.

MIND, MEDICINE AND MAN. By *Gregory Zilboorg*, M.D. Cloth. Pp. 334. Price, \$3.50. New York: Harcourt, Brace & Co., 1943.

In this short and readable volume one finds clearly and authoritatively expressed by a psychiatrist and writer of wide experience the fundamental value of psychanalysis in understanding the dynamics of psychologic motivation and an explanation of some of the many problems of human behavior. Although supposedly written for the layman it would seem to be of interest chiefly to the medical profession and to workers in allied fields. Much of the book deals with the contributions of Sigmund Freud and the important aspects of his theories are lucidly presented, analyzed briefly and on the whole accepted. Psychiatrists may find points of contention as for example in the etiology of the major psychoses and one senses a defensive style by the author as though in anticipation of this. The last chapters dealing with the subjects of crime, judgment and religion are written with less constraint and offer interesting and challenging ideas for consideration. This is a distinct contribution to medical literature, convincingly revealing the progress of medicine in understanding mind and man, a subject with which all physicians should be familiar.

DICTIONARY OF BIO-CHEMISTRY AND RELATED SUBJECTS. Editor-in-Chief, *William Marias Malisoff*, Professor of Bio-Chemistry at the Polytechnic Institute of Brooklyn. Cloth. Pp. 579. Price, \$7.50. New York: Philosophical Library, 1943.

This volume presents a pioneering effort in an entirely new field. It will be found to be more than a dictionary. Instead of a mere alphabetical glossary it more nearly resembles an encyclopedia. In it will be found a great deal of fairly lengthy au-

thoritative discussion. It is designed for readers of biochemical literature who might want the definitions of terms used more than a decade ago as well as of terms just coined. Of interest to those in the field of physical therapy should be the discussions on "biophysics," "growth" and "wound healing" to mention only a few. As an example we quote from the discussion on "biophysics":

Jacques Loeb, a founder of biophysics, certainly devoted most of his efforts to formulating biological problems in terms of presumably underlying physical laws. But when he came to discuss theory, he stressed quantification almost exclusively—he did not assert that biology cannot become a science until it is physical, but that it cannot become a science until it is mathematical. That physics—the science of matter—has in fact preoccupied itself with those objects which used to be termed "non-living" is logically accidental, not intrinsic. Taken in this sense, the "physicalizing" of biology merely means the attempt to analyze certain complex phenomenal patterns in terms of somewhat simpler patterns which have already been the object of intensive study. In this sense it is neither novelty nor heresy, but an inevitable extension of the classical biological procedure of analyzing organisms into organs, organs into tissues, tissues into cells, and cells finally into their discernible parts.

An imposing group of collaborators have joined to help produce this work. In most instances each special discussion gives the name of its author. We believe this volume should be in the reference library of the medical school and available at all times to students either beginning or advanced.

NEW AND NONOFFICIAL, 1943, CONTAINING DESCRIPTIONS OF THE ARTICLES WHICH STAND ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION ON JANUARY 1, 1943. Issued Under the Direction and Supervision of the Council on Pharmacy and Chemistry of the American Medical Association. Cloth. Price, \$1.50. Pp. 772. Chicago: American Medical Association, 1943.

The present volume has been revised in accordance with specifications of the U. S. Pharmacopoeia XII and the National Formulary VII. In accordance with the usual custom of the Council on Pharmacy and Chemistry of the American Medical Association the general articles have been revised to bring them up to date. Consequently many articles which appeared in New and Nonofficial Remedies for 1942 have been omitted by action of the Council because they conflict with the rules that govern the recognition of articles or because their distributors did not present convincing evidence to demonstrate their continued eligibility. Others were omitted because they are off the market. Up to the time of publication, when necessary, statements have been revised concerning the actions, uses, dosage, composition, identity, etc. Especially in these rapidly moving times it is essential to have such a volume available. It is indispensable.

PHYSICAL THERAPY ABSTRACTS

A Study of Normal Cardiac Response to Water Below Body Temperature With Special Reference to a Submersion Syndrome. W. W. Tuttle, and Joyce L. Templin.

J. Lab. & Clin. Med. 28:271 (Dec.) 1942.

In many institutions the importance of being able to swim as a means of self-preservation is felt so keenly that everyone is required to acquire an elementary mastery of it. Wherever large groups are required to go into a swimming pool, there are always some who experience reactions so disturbing that they never have a feeling of well-being when submerged in water.

Each year there are numerous drownings attributed to heart failure, cramps and exhaustion. Horton and Gabrielson investigated the actual causes and concluded that in all probability many drownings were due, in reality, to a syndrome which they called "hypersensitivity to cold." As a result of their investigations, they propose two tests which seem adequate for detecting persons who are hypersensitive to cold. By making use of such tests it is proposed that persons who are hypersensitive to cold may be appraised of the fact and can thus avoid unpleasant experiences due to submersion in cold water.

The tests proposed by Horton and Gabrielson are (1) the ice-cube test, and (2) the cardiovascular test. The ice-cube test is the simpler of the two but is less reliable because the systemic reactions are limited. It is done as follows: a cube of ice is held in contact with the forearm of a person in the sitting position for three minutes. If he is hypersensitive to cold, a wheal slightly raised and surrounded by a red flare will appear within two to five minutes after the removal of the ice cube.

The cardiovascular test is more complicated, but recommended, because it gives better systemic reactions. The test consists of establishing resting heart rates and blood pressures in the supine position. Then the hand and forearm of the subject are immersed in water at a temperature of 8 to 10 C. for from five to ten minutes. At the end of five minutes of immersion blood pressure and pulse rate are recorded. Then the subject's hand is removed from the bath, and blood pressure and pulse rate are taken every two minutes for the next fifteen to twenty minutes. At the same time observations are made for swelling, hives, color changes, and subjective sensations.

On the basis of data collected from 68 college women, the following conclusions are drawn concerning the effects of submersion in water: 1. Submersion in water of swimming pool temperature causes a drop in the heart rate of normally adjusted persons. 2. The amount of the

decrease in heart rate due to submersion varies directly with the resting heart rate. 3. Failure to experience a decrease in heart rate when submerged in water below body temperature is owing either to a lack of emotional adjustment (fear) or to a failure to compensate physiologically. 4. Where emotional factors are controlled, failure to experience a significant drop in pulse rate during submersion in water below body temperature indicates sensitivity to the water. 5. It is suggested that the conditions causing a failure to make normal adjustments to submersion in water be called the "submersion syndrome."

Treatment of Mental Disorders by Electrically Induced Convulsions: A Preliminary Report. Erich Otten.

Illinois M. J. 83:336 (May) 1943.

This form of therapy is of great value in the cases of involutional melancholia; almost as good in the manic depressive psychoses of the depressive type; fairly satisfactory in the manic type of manic depressive psychoses. In regard to the manic depressive psychosis of the mixed type, the cases treated did not do very well, since two out of four cases that went home relapsed after a short time, and the other two cases made no improvement; however, since there was only a small number of cases, this is no criterion. The treatment may be helpful in the early schizophrenics, although the author has not seen any cases whose psychosis was less than six months old, and the cases of longer than six months duration were not helped to any great extent, although some of them did go home on parole. It was the author's observation that schizophrenics of the catatonic type showed very good mental improvement if the duration of the psychosis was less than six months, in all other cases, there is no change. Psychoneurotics are not benefited by this treatment, except if it is made part of a course of psychotherapy. These patients who had been given other forms of shock therapy and showed temporary improvement as a result, also showed only temporary improvement with electro-shock therapy. The question as to whether the treatment is worth while, can only be answered in one way. Although only a small number of cases are improved appreciably, yet this is better than that none should be helped.

The Effect of Sulfonamides Upon Artificial Fever Produced by Peptone in Animals. Eldon M. Boyd, and John S. Pratten.

Am. J. M. Sci. 204:715 (Nov.) 1942.

Sulfanilamide, sulfapyridine, sulfathiazole, sulfadiazine, sulfaguanidine, parabenzylsulfanilamide,

parasuccinylsulfanilamide, promin, sulfacetamide, sulfanilyl-dimethylsulfanilamide, azosulfamide and sulfonamide EOS were given by mouth in doses of 0.1 Gm. per kilo body weight to rabbits and, in some instances, albino rats and cats, with an artificial fever induced by the intramuscular injection of peptone and with suitable controls. Body temperature was recorded rectally at intervals of 0.5 hours.

The only sulfonamide which, at this dose, had any antipyretic effect toward peptone fever was sulfapyridine and it exhibited this effect only on some rabbits and not at all in albino rats.

Sulfanilamide, parasuccinylsulfanilamide, promin, sulfacetamide and azosulfamide were found to exhibit varying degrees of pyrexia in normal animals.

Use of Ultraviolet Radiation in Reduction of Respiratory Cross Infections in a Children's Hospital: Final Report. Elizabeth Chant Robertson; M. Elizabeth Doyle and Frederick F. Tisdall.

J. A. M. A. 121:908 (March 20) 1943.

These authors reached the following conclusions:

1. Infants treated in open six bed rooms or in a room with 8 foot partitions between the infants developed two to three times as many respiratory infections as babies in a room divided into cubicles with partitions running to the ceiling, a curtain of ultraviolet radiation across their entrances and an air changing system.

2. When the ultraviolet lamps were turned off and the progress of the babies in this room, which had complete partitions and an air changing system, was compared with that of other babies in the room with partial partitions, it was found that those in the latter room had only slightly more infections.

3. The curtains of ultraviolet radiation between the babies were therefore the major factors in the decided reduction of respiratory cross infections described in conclusion 1.

4. Two hundred and seventy-six strains of group A hemolytic streptococci and pneumococci were recovered from the staff and the babies. In only 18 instances was the transfer of these organisms from patient to patient, from staff to patient or vice versa demonstrated.

5. Infants treated in rooms in which the upper air was irradiated showed approximately the same number of infections as babies treated in rooms similar but without ultraviolet irradiation. The doors and windows in these rooms were frequently left open.

6. Premature infants treated in the regular premature room had nearly twice as many respiratory infections as similar infants in a room in which the upper air was irradiated. The doors and windows were kept closed in these rooms.

7. During the last two and one-half years the progress of 682 babies has been followed. Two hundred and fifty-eight, or 38 per cent, have developed respiratory infections, many of which were mild.

Single Combined Treatment for Gonorrhea. Charles Ferguson; Maurice Buckholtz, and Samuel Gersten.

Am. J. M. Sci. 204:685 (Nov.) 1942.

We have found several interesting factors in our study. It would appear that duration of illness has no bearing on the efficiency of the combined sulfathiazole and fever therapy. Success has been obtained in with a duration of as short as three days.

In the series reported the combined therapy of sulfathiazole and hyperpyrexia successfully cured 85.3 per cent cases of gonorrhreal urethritis. Necessity of a rapid cure is the chief indication. It is of distinct advantage when previous treatment has failed.

The treatment should be confined to the young and vigorous, as it is drastic. The most annoying complications are herpes about the face as a result of the heat. Some patients suffer malaise and the constant attention of a nurse is required. Large doses of the sulfonamides are not without risk. The authors report that one patient developed anuria from 300 gr. of sulfanilamide, given at a rate of 80 gr. per day. No calculus or mechanical block was involved. He was anuric for eight days, then recovered. French has called attention to an interstitial myocarditis that may result from these drugs.

Of 75 cases of uncomplicated and previously untreated gonorrhreal urethritis, treated with sulfathiazole 5 Gm. for eighteen hours prior to fever therapy of seven hours of 106 F. 88 per cent were cured (22 out of 25). Of those receiving this therapy after one course of sulfonamide, 90 per cent were cured (18 out of 20). Of those receiving this therapy after more than one course of sulfonamide, 85 per cent were cured (22 out of 26). Of 2 cases of epididymitis not included in this list, each recovered after one treatment of the combined therapy.

Electrical Shock Therapy. William J. Heffner.

M. Bull. Vet. Admin. 19:396 (April) 1943.

The first installment of equipment for electrical shock therapy in facilities of the Veterans' Administration was made at Northport, Long Island, over a year ago. Subsequently, machines were provided at the facilities in Bedford, Mass.; Downey, Ill., and North Little Rock, Ark. and it is contemplated to make this treatment available at other Veterans' Administration hospitals for neuropsychiatric patients.

Should there be osteoarthritis of the spine, curare (Introcastrin, Squibb) is used, to lessen the force of the convulsions. Radiologic examination of the spine is made after every fifth treatment.

Facility in producing a convulsion is to a great extent determined by the maintenance of the patient's tissues to the passage of current. Current factors have been found to have a definite influence in this respect.

Compression fractures of the vertebrae have

resulted from electrically produced fits. Such fractures might be evidenced to the patients only as pain of no great intensity in the back, and no more might be heard about them. In deciding whether this liability to a spinal lesion constitutes a contraindication to the treatment, one has to weigh the benefit that would come from cure of the mental condition. Is an occasional accident too much of a price to pay for the recapture of sanity and social usefulness?

The cardiac arrhythmias, auricular fibrillation and heart block, which have been noted after the use of metrazol, have not been reported in electrotherapy; and fractures of the femora and dislocation of the jaw, which are relatively frequent after metrazol, are very rare after electroshock.

**Rehabilitation in an E. M. S. Orthopaedic Unit.
S. Alan S. Malkin, and Gilbert Parker.**

Brit. M. J. 4288:315 (March 13) 1943.

Rehabilitation, it has been stated, begins not in a special center but in a hospital bed and ends with a return to full pre-accident activity. All bed patients perform general and special bed exercises regularly. For those confined to bed with leg injuries occupational therapy of a medial nature is not possible, but diversional work is started in bed.

When a patient is walking satisfactorily in plaster he is transferred to one of the associated auxiliary hospitals. To these auxiliary hospitals go all cases in walking plasters, upper-limb fractures in and out of plasters, etc.

Here the day begins with general exercises in which all patients join. Later, group exercises are carried out, particularly directed to the affected limb. We find general exercises *en masse* useful, as the men in plaster vie with those out of plaster in the energy of their movements and it is remarkable how small a disability a long leg plaster can become. Exercises are followed by and interspersed with organized games. Those unable to take part in organized games indulge in less energetic pastimes; croquet is a particular favorite with the early walking-plaster cases, and a man who says he can walk only a few hundred yards without tiring will walk much farther in the course of an afternoon's heated croquet.

An endeavour is made to find jobs at the auxiliary hospitals which will serve as occupations with a therapeutic value, although diversional work is continued in the evenings. When a person is walking satisfactorily he is transferred to the rehabilitation annex.

To the rehabilitation annex are transferred all cases of fracture out of plaster (except minor cases requiring little rehabilitation), fractured spines, both in and out of plaster, severe soft-tissue injuries and all knee-joint injuries such as cartilages three weeks after operation. During the year September, 1941, to August, 1942, 295 patients were admitted to the annex.

The Flexion Treatment for Low Back Pain. Indications, Outline of Conservative Management and a New Spine-Fusion Procedure. Louis W. Breck, and W. Compere Basom.

J. Bone & Joint Surg. 25:58 (Jan.) 1943.

The treatment varies somewhat according to whether the backache is acute or chronic and whether it is severe or mild. The acute severe cases are best treated by putting the patient in a hospital bed with the back rest raised to forty-five degrees and the knee rest raised almost as far as it will go. If the patient is not in a hospital bed, he can be treated at home by means of a back rest and a knee support which place him in a position similar to that just described. This can be done easily and inexpensively by means of two boxlike supports, devised by the authors, which are made of one-half inch plywood. Pillows are placed over each of them. The back rest is triangular in shape in the side view and measures eighteen inches on the two sides and twenty-five inches on the other. It is twenty-two inches wide, and the long side, where the patient's back rests, is made in two pieces with the center depressed four inches in a hollowed-out manner, which makes the back rest much more comfortable. The knee rest is a flat boxlike arrangement with the two sides measuring seven inches high and twenty-two inches long. The patient is kept on his back with the back rest and knee rest in place part of the time (usually two hours at a time, three or four times a day), and the rest of the time he lies on one side with his knees drawn up. He is advised never to lie flat on his face or flat on his back with his hips extended.

In addition to this, heat is used in the form of short wave diathermy or a heat lamp. Massage is also given to help alleviate the pain and muscle spasm. The patient is given flexion exercises in bed the first day. The first exercise consists of pulling the knees up to the chest with the spine flexed, and the neck and chest brought well forward toward the knees. The patient is instructed to do this six times a day, starting with once each time, and increasing until he is doing it ten times, six times a day. The patient is usually much improved by the end of three to seven days, and can then be up and about. A few days later he can ordinarily return to work.

It is felt that the most important part of the treatment is to impress upon the patient the importance of flexing his lumbar spine and keeping it flexed.

In this summary the authors state that there is a sound basis for the flexion treatment of low backache due to a narrowed lumbar disc, regardless of whether the pain is due to a protruded disc, or subluxation of the lumbosacral or lumbar facets.

Conservative flexion treatment as outlined and utilizing new apparatus has been found efficient for home treatment.

A new spine-fusion procedure, using a mor-

tised interspinous bone block, has been successful in restoring the intervertebral interspaced to normal; in reducing the accompanying subluxation; and in giving internal fixation to the routine spine-fusion grafts.

The Amputé: What Should Be Done for Him?
Mandell Shimberg.

M. Bull. Vet. Admin. 19:428 (April) 1943.

A stump remains in a plastic state for some time. Even with expert attention given it, a variable period is required for a stump to reach a near-static stage. Obviously, the purchase of a permanent artificial limb during this period would be imprudent.

The solution to this problem is what properly can be called the "stage of the temporary leg." Two or three days before the surgeon pronounces the patient ready for a temporary artificial leg, an orthopedic mechanic takes proper measurements of the sound leg and notes the level of amputation.

The roughly made leg is fitted to the patient, who is then taken to a special room, equipped with sets of parallel bars and mirrors. Under direction and supervision the amputé is there taught to walk between the bars for one-half hour, two or three times a day, for several days. When he has acquired the knack of walking, he is given a cane and sent to a parade hall, in which he takes exercise. Soon after, he is taken outside and is encouraged to walk under natural conditions. In this program, it is found that the stump shrinks rapidly and that from three to six plaster buckets have to be made to replace those which have become too large. After a varying period the patient arrives at the next stage.

After a variable interval, the amputé has become ready for a permanent socket made of wood. After suitable measurements, this wooden socket is made and attached to the roughly fabricated temporary leg, which then becomes his rough permanent artificial leg. The patient is encouraged strenuously to exercise with this leg, over smooth and rough ground, several hours a day. Every day he goes to the orthopedic workshop and relates his experience with the leg to the mechanic who made it who, if necessary calls in the surgeon for advice. Alterations are made to the socket if necessary. If and only when the patient says that the leg is perfectly comfortable is he taken for a final check-up. If that proves satisfactory, the leg is finished.

The steps of reeducation and readjustment are, of course, a natural corollary of their predecessors and need no discussion. They are the summation of the program aimed at so compensating for the disability of the amputé that he can resume his former occupation, or some other occupation better adapted to his physical defect and his intrinsic abilities.

The patient who has lost an arm is, of course, a different problem from him whose leg has been amputated. It is not usually troublesome to fit

an artificial arm; the more difficult matter with these amputés is their occupational readjustment. For it takes a longer time than with the men who have lost a leg to train patients to use an artificial arm; the movements are so much more complex and refined, and there are so many that will be needed in the future daily tasks. Hence, patient and competent instructors and a well-equipped occupational therapy unit are needed for arm amputés.

The Treatment of Chronic Sinusitis by Silver Ion Transfer: A Preliminary Report. Anthony DeGroot, and George M. Melvin.

M. Bull. Vet. Admin. 19:433 (April) 1943.

The usual types of physical therapy, such as diathermy, infra-red and ultraviolet radiations, have been tried with varying degrees of success, but commonly with only brief periods of relief. Inasmuch as the therapeutic use of silver in topical application, such as argyrol packs (Dowling treatment), had proved of some benefit, it occurred to us that such effects might be increased if the silver were applied by means of ion transfer. It was decided to use a 2 per cent solution of argyrol in distilled water, the ion transfer being more readily accomplished with a weak solution.

The immediate effect of the treatment is a profuse discharge of thick mucus, with the subjective effect of easier breathing and relief from the headache which is so often one of the most distressing symptoms.

The treatments are given three days each week, for from one to three months, dependent on the condition of the patient. They are then reduced to two a week and, as the symptoms improve, are further reduced to once a week for four weeks and finally discontinued.

Although this preliminary report is based on experience with only five patients and it is not contended that this form of treatment is curative, it is thought that in selected cases of chronic sinusitis it is of value in the relief of the more distressing symptoms of the disease and that, in this respect, is of more lasting benefit than the use of argyrol packs.

Electrosurgical Excision of Pterygium. A New Method. Daniel B. Kirby.

Am. J. Ophth. 26:301 (March) 1943.

A pterygium is a patch of thickened conjunctiva with a vascular undergrowth extending over a part of the cornea.

Recognizing the value of high frequency electric current in coagulating tissue and destroying blood vessels both normal and abnormal, the author has applied the principle to the excision of pterygium for the past five years.

Local anesthesia is employed both by instillation and infiltration.

The base is severed by piercing its bulk with needles and sufficient high frequency current used to coagulate the tissues. The vessels in a vertical

line, 1 mm. wide, are destroyed. Scissors are used to cut along the coagulated line. If portions of coagulated tissue remain at the base, these are picked up and excised.

The method of closing the denuded area of sclera is important.

The procedure has been satisfactory from the standpoint of satisfactory removal of abnormal tissue, of removal of corneal opacity, of prompt healing without complication, of nonrecurrence and of satisfaction to the patient.

Observations on Results of Combined Fever and X-Ray Therapy in Treatment of Malignancy.
H. S. Shoulders; E. L. Turner, and L. D. Scott.

South. M. J. 35:966 (Nov.) 1942.

On the basis of gradually accumulating evidence, Shoulders and his co-workers suggest that the maximal destructive effect of roentgen therapy on tumor cells should be obtained by applying it at the time of the greatest physiologic disturbance caused by induced fever, which is also lethal to certain tumor cells. They subjected 50 patients with far advanced inoperable cancer to roentgen therapy while the hyperpyrexia was at its height. Once the desired elevation of temperature (104 to 106 F.) is reached it is maintained for an hour. The patient, fully protected by blankets, is then transferred to a warm roentgen therapy room. The patient is kept well wrapped except for the portion of the body to be irradiated. The number of combined fever and roentgen treatments varied from one to four, depending on the lesion and its location. Additional roentgen therapy alone has been administered to all patients. There have been no fatalities traceable to the technic used. Thirty-nine (78 per cent) of the patients have shown definite improvement, such as relief of pain, decrease in the size of the tumor, cessation of hemorrhage, improved appetite and general comfort. The last in some instances suggests complete clinical relief. Eleven patients have shown no demonstrable improvement. The combined method of treatment produced results definitely superior to those obtained with irradiation alone. It is yet too early to indicate whether combined fever and roentgen therapy will be more than a palliative procedure. The procedure might serve as a more valuable adjunct to surgery than irradiation alone in cases in which postoperative irradiation is indicated.

Results With Local Heating in Pelvic Inflammatory Diseases. John R. Upton, and Grace Benson.

J. A. M. A. 121:38 (Jan. 2) 1943.

The summary of the authors showed the following: Local pelvic heating should be used more extensively in the treatment of subacute and chronic pelvic inflammatory diseases. Surgery should be withheld until more conservative measures have been given a trial. The ideal outcome would be complete absorption of the inflammatory tissue, leaving the patient capable of

reproduction and able to carry through to term. The best clinical results were obtained with the conventional diathermy for which the vaginal electrode was used. The best clinical results were obtained when a moderately high temperature was sustained. Short wave diathermy with the vaginal electrode gave equally good results; fair effects were noted with the pad or coil method. A number of vaginal burns occurred when the Elliott machine was used. Skin tolerance to diathermy appears still to be the best indicator in preventing damage to the tissues. Gonorrhreal and postabortal infections respond more rapidly than postoperative complications. No attempt was made to kill the gonococcus in any of the cases in which local protracted high fever therapy was given. Psychic factors must be closely evaluated in women complaining of pelvic discomfort. Noteworthy features of conventional diathermy are ease of treatment, local as contrasted with a generalized heating, much more comfort for the patient, relief from pain, decrease in size of inflammatory exudate, less chance of damage to tissues, fewer treatments necessary and possibility of fertilization at a later date as contrasted with the usual operative barrenness when surgery is resorted to.

Modern Interpretation of Physical Therapy.
F. H. Ewerhardt.

South. M. J. 36:12 (Jan.) 1943.

A recent survey shows that there are now some 40,000 diathermy machines in physicians' offices which presumes an interest and some degree of faith in its use; but what should be said when we are told that there are 50,000 machines in the hands of laymen, made possible by unethical advertising and too frequently on recommendation of the physician. Perhaps this deplorable condition would not exist if physicians were more deeply conscious of the unethical and perhaps unprofessional aspect of recommending home treatment with complicated apparatus, and especially so if it were known that faulty administration may readily cause damage no less than roentgen therapy. In the past much damage to cells has been done by the unintelligent use of diathermy in the treatment of joint diseases. The general practitioner should do as much physical therapy as may seem indicated, but, according to known principles, it should not be done in a haphazard, slip-shod fashion.

How may the general practitioner, who has had no training in this field, since his medical school probably did not teach it, acquire the necessary knowledge to become absorbingly interested in physical therapy. There is only one answer: education, self-education. Truly, scientific physical therapy, whose principle by-product is the satisfaction which comes from a job well done, demands at least a fair knowledge of the subject. The source of this information comes from reading journals and texts easily obtainable, in attending medical meetings and even taking refresher courses much as is done in other branches of medicine.

Convulsive Shock Therapy in Elderly Patients—Risks and Results. Vernon L. Evans.

Am. J. Psychiat. 99:531 (Jan.) 1943.

Fifty patients over 50 years of age who had severe mental illness were treated with convulsive shock therapy. Of these 50 patients, 40 were either recovered or improved enough to be discharged to their homes. Ten remained unimproved. Although the risks taken seemed to be great, the complications and untoward results were remarkably few. Most of the cases had failed to respond to several months of conservative treatment and in many cases it seemed almost certain that recovery would not occur unless drastic treatment was instituted. Even though some of the cases might have recovered eventually with prolonged conservative treatment, the time and economic saving was well worth the risks taken.

Restoration of Function in the Burnt Hand. D. C. Bodenham, and M. B. Brist.

Lancet 1:298 (March 6) 1943.

The first principle, preached but often not practiced, is the maintenance of a "basic position." This position is so chosen that, given the minimum ultimate range of movement, such movement will be operating at the maximum advantage of function.

Active movement in the early treatment of a burned hand may increase the inflammatory and edematous reaction and reduce the available range of movement. Depending on the depth of the burn there is a stage after which movement is of great value in reducing the swelling by improving the lymphatic and venous return. Whenever the hand is not being moved it should be well elevated to prevent the reaccumulation of the fluid.

With second degree burns movement may be allowed within a day or two of the injury. At first such movement should be limited; if there is no reaction it should be progressively increased each day.

When the hand is healed a weak clock spring may be adapted as a substitute for the extensor tendons and used as a temporary exerciser until surgical repair can be attempted.

All movements should be active; passive movements should never be allowed. The organization of exudate within joints and surrounding tendons which results from the rapid break down of adhesions by passive movements can only serve to limit further the ultimate movements of the hand.

For the best results, cooperation of the patient and nursing staff is important. Patients should be taught to understand something of the value of position and of early movement and it should be explained to them how much their progress depends on their own efforts.

The interest of the patient is maintained as he goes through his daily exercises and watches his own progress. During the course of treatment the surgeon should be satisfied with any

improvement, however small, rather than attempt too much and produce a reaction.

The Effect of Electrically and Chemically Induced Convulsions on Conditioned Reflexes.

M. Kessler, and E. Gellhorn.

Am. J. Psychiat. 99:687.

Experiments are reported in which a conditioned response to the sound of a bell was established in 18 male rats. This response was then inhibited by lack of reinforcement with the unconditioned stimulus. Although control experiments showed that conditioned responses thus inhibited do not recover spontaneously it was found that the application of one or more metrazol convulsions or of electrically induced convulsions restored temporarily the inhibited conditioned response. The experimentally proved removal of inhibition by "shock treatment" is of interest in view of the effects of the shock treatment in psychoses.

The Management of Fractures in Old People.
M. Forrester-Brown.

Practitioner 150:349 (June) 1943.

As soon as the patient can leave the bed for more than a few minutes, he should be induced to start some phase of usual activities and increase daily. Thus, if he is a golfer, he can start to putt on the drawing-room carpet; if he merely walks to the office, he can begin to walk down the corridor, then get to garden path, later practice stairs. For patients who have severe injury of the lower limb, a great help for reeducation in normal walking is to erect parallel bars of gas pipe for 15 or 20 feet in a level part of the garden. This prevents the vicious habit of leaning to one side on an attendant and it encourages mental independence. The bars should be about elbow level or a little lower.

During the stage of confinement to bed, regular breathing exercises and abdominal contractions, with massage and exercises for the sound limbs, help to maintain mental and physical well-being. These should be given at least twice a day, but they should be slow and gentle for fear of forcing round a volume of blood with which the flabby senile heart could not cope.

Low Back Pain. Anatomic and Constitutional Aspects in the Differential Diagnosis. Harry E. Mock.

Wisconsin M. J. 42:389 (April) 1943.

Physical therapy has become an outstanding specialty since the first World War. Many are the low back conditions that are treated, often beneficially, by physical therapy. To be successful, this method must include a thorough study of the entire body as well as the back. Disease or injury of the spinal column or the cord must be ruled out, or at least one must be positive that a local condition, if present, is adaptable to physical therapy. When the condition is due to some

constitutional disease, to continue to treat an individual with low back pain by physical therapy is erroneous management. But when a thorough course of heat, massage and corrective exercises for faulty posture is indicated, to continue to treat a low back pain by only short wave, diathermy, or a heat lamp is to be condemned.

Many doctors accept the patient's statement that he strained his back while lifting and, without making a complete examination, turn the patient over to a nurse for short wave or heat treatment. Many other patients receive a "shot" to relieve the pain. The fact that they are treated by the company doctor as an injury case fixes the idea of trauma and compensation. Many other patients in this category are referred to the plant nurse, who likewise accepts the traumatic etiology and gives heat treatment or tapes the back. Such treatment is a form of machine therapy and should not be classified or thought of as true physical therapy. The etiologic factor of injury is not correct in the majority of instances, but the fact that the theory of injury was accepted and treatment instituted usually makes the company or its insurance carrier responsible.

The Place of Health Resort Therapy in the Treatment of Conditions Affecting the General Nervous System. George B. Fletcher.

Tri-State M. J. 15:2912 (March) 1943.

The diseases of the central nervous system seen at resorts can be classified about as follows: (1) Spastic paralysis. (2) Flaccid paralysis with atrophy. (3) Sensory changes which may accompany either of the above. (4) Peripheral nerve conditions as neuritis and neuralgia.

Pain in the Spine, Thorax, Shoulders and Arms Simulating an Anginal Syndrome. Frederick W. Niehaus.

Nebraska M. J. 28:72 (March) 1943.

The anginal syndrome is at times difficult to identify. Referred pains from the muscle groups of the shoulder closely follow the distribution of the anginal pain. Travell et al., recently showed that the zones of referred pain from the serratus posterior superior and the infraspinatus muscles could be easily confused with it. All conditions comprising, or part of, the "painful shoulder" may likewise present a perplexing picture. The chief factors to be considered are fibrosis of shoulder or neck region which may include chronic adhesive subdeltoid bursitis, also called periarthritis; osteoarthritis of shoulder or cervicodorsal spine; subdeltoid bursitis; rheumatoid arthritis, and brachial neuralgia.

Shock in Physically Induced Fever Therapy Treated with Blood Plasma. Arthur M. Pruce.

J. A. M. A. 121:935 (March 20) 1943.

Shock following physically induced fever therapy was successfully treated by the intravenous

injection of 250 cc. of blood plasma after the usual accepted antishock measures including intravenous isotonic solution of sodium chloride and hypertonic dextrose and oxygen had failed. This appears to be the first report on the use of plasma in shock from this form of treatment and emphasizes the importance of the use of plasma in the treatment of secondary shock from all causes.

Physical Therapy Measures in the Treatment of Peripheral Vascular Diseases. Emil J. C. Hildenbrand.

South. M. J. 36:224 (March) 1943.

All patients should be put at rest, bed rest depending on severity. Do not elevate on a pillow. Sitz baths and whirlpool baths are used if no ulcerations are present, at a temperature of 98 to 100 F. Compresses of boric acid solution or magnesium sulphate solution only are placed on infected ulcer areas for one-half hour three times a day. Local heat is never used except the amount that may be generated in a regulated heat cradle which extends up over the abdomen primarily for the purpose of reflex heat. Use hot water bottle or electric pad constantly to the trunk or infra-red lamp or diathermy at regular intervals three to four times daily. Immerse hands and arms if the pathologic condition is in the feet into water 113 F. for thirty minutes three times a day. Give Wright's modification of the Buerger Allen exercises three times a day.

Cold or refrigeration is still somewhat experimental as a treatment but proven as an anesthetic. The ground in this treatment has only been broken and it probably will be used soon in all vasomotor cases routinely.

Pressure suction in the arteriosclerotic group with or without diabetes and with or without ulcer, benefits patients who can walk two to five blocks without claudication. Cases with rest pain are always doubtful. Some benefit, others do not. Never use this in phlebitis or spreading infection.

Intermittent venous occlusion is used only in the home because of simplicity. Its benefits are still in question. It is used in the same type of case as in suction pressure.

Artificial fever therapy is used in Buerger's disease. The recurrence is in a patient who persistently smokes. Low fever is used 103 to 104 F. two to three hours, also allowing the foot to protrude from the cabinet if pain is experienced.

Mecholy ion transfer is used in Raynaud's disease and scleroderma.

Comparison of Metrazol Convulsive Therapy with Electric Shock in Treatment of Schizophrenia. Leon Reznikoff.

Arch. Neurol. & Psychiat. 49:587 (April) 1943.

Approximately the same results were obtained in 100 schizophrenic patients treated with electric shock as in a similar group of patients treated with metrazol. Two to eighteen months after treatment was completed, 32 patients were improved and 68 unimproved.

There is a pronounced tendency to relapse in schizophrenic patients treated with convulsive shock therapy.

Electric shock therapy is preferable to metrazol therapy, as has been pointed out by many workers, because there are amnesia for the treatment, less fear and anxiety, painless shock and avoidance of repeated intravenous injections in resistive patients.

Its greatest value consists in aiding in the preparation of uncooperative patients for other therapeutic measures, such as psychotherapy, occupational and recreational therapy and general psychiatric management.

Injections of Gold Sodium Thiosulfate Plus Ultraviolet Irradiation. Otto E. L. Schmidt; Ira C. Evans, and William B. Chamberlin.

Arch. Dermat. & Syphil. 47:478 (April) 1943.

Under the conditions of the experiment (i. e., doses comparable to those used in human beings, given weekly for ten weeks) neither intradermal nor intramuscular injections of gold sodium thiosulfate solution produced chrysiasis in guinea pigs or rabbits when concurrent ultraviolet radiation was administered. Intradermal injections of a 0.2 per cent aqueous solution of gold sodium thiosulfate invariably resulted in permanent scar formation in guinea pigs and rabbits, without relation to exposure to ultraviolet radiation, when given in doses of 1 mg. of gold sodium thiosulfate per kilogram of body weight. Intramuscular injections of 0.2 per cent aqueous solution of gold sodium thiosulfate produced no gross or microscopic changes in the animals studied. No deposition of gold in the skin or subcutaneous tissues of the guinea pigs or rabbits was detectable either in routinely stained sections or in unstained sections examined by the dark field technic. This study offers additional evidence that the clinical administration of gold sodium thiosulfate might safely be tried by the intramuscular route. However, the intradermal injection of this salt into man, if attempted, should be in but small amounts and with great circumspection.

Asthma in Childhood. Arthur Hurst.

Brit. M. J. 4291:403 (April 3) 1943.

In discussing treatment the author stated in an attack of asthma the obstruction caused by the spasm of the bronchioles is diminished by the rise in the negative pressure in the thorax caused by the forced inspiration and increased during the forced expiration by the conversion of the negative into a positive pressure. This explains why asthma differs from all other forms of dyspnoea in being mainly expiratory. The respiratory excursion is much reduced and the child is unable to take exercise without dyspnoea. This condition is often mistaken for emphysema, but in contrast with true emphysema it can be rapidly and completely cured by expiratory exercises, an excellent illustrated description of which has been edited by Dr. Livingstone

for the Asthma Research Council. These exercises restore the normal postural tone of the thoracic muscles, so that the chest resumes its natural shape and the lungs their normal size, the respiratory excursion returns to normal, and the child is able to take vigorous exercise without distress. So long as any tendency to asthma persists, simple expiratory exercises should be carried out every morning and evening unless an attack is actually present, and any postural errors, especially habitual shrugging of the shoulders, should be corrected.

Expiratory exercises should not be regarded as a substitute for walking and open-air games but as a form of training. Nothing is more undesirable than prohibiting games. An asthmatic child should be taught to regard his asthma as an inconvenience and not a disease.

Short Wave Therapy in Medical Practice. K. R. Speeding.

Brit. J. Phys. Med. 6:48 (March-April) 1943.

A condition such as furunculosis, in which diathermy was not always useful, may be treated now by means of the short wave. It is found that contact between electrode and skin is unnecessary, a fact which is of particular significance in the treatment of lesions such as the open sore (as exemplified by the varicose ulcer), or the tender area usually present in traumatic arthritis. The differences in response are due largely to the inefficiency of medical diathermy in which heating of the deeper structures is required, as the resistance of some of them is too great to allow passage of the current. Consequently, such deep structures do not get the full benefit of the treatment and there is often an intense concentration of heat in the neighboring tissues which happen to be good thermal or electrical conductors.

Chronic Arthritis. H. Kelikian.

Surg., Gynec. & Obst. 76:469 (April) 1943.

In treating arthritics it is safe to regard the rheumatoid variety as a generalized, systemic disease and treat the patient as a whole. In fulminant stages, it is well to prescribe a complete physical rest, splinting the joints in optimum position of function should ankylosis intercede. The latter could at times be obviated by making the splints removable so as to permit periods of guarded exercise, or better still, one may resort to traction and countertraction instead of fixed splintage. All measures which may contribute to the general well being of the patient should be undertaken: high caloric, high vitamin diet, tonics, cathartics, analgesics, sedatives, spas, etc. Foci of infection are eliminated to give the patient the benefit of the doubt, and recourse may be taken to gold injections and vaccines as there is at least a relatively rational basis for resorting to parenteral therapy in a generalized disease like rheumatoid arthritis, which might be caused or aggravated by infections and which is hopeless at times. Thus during the earlier stages of rheu-

matoid arthritis measures resorted to are mainly medical and systemic. The surgeon veers his attention toward the local manifestations of the disease as aspirating overdistended joints, splinting painful ones and applying various forms of traction and countertraction to prevent deformities.

Apart from exercise, traction, and splintage, numerous local measures are undertaken in rheumatoid arthritis. Massage, heat therapy, histamine, and mecholyl ion transfer are resorted to with the idea of improving local circulation. Massage and manipulation is not begun until the sedimentation rate has become normal and the joint inflammation has subsided. At times it becomes expedient to inflate the joint with air, oxygen, saline, or iodized oil, and then manipulate it. Injection of such material purports toward breaking or slackening adhesions. Manipulation should not be forceful; it is safer to use less force and repeat the procedure. A joint requiring great force had better be operated upon so as to sever tough adhesions surgically — either within or around the joint capsule.

Problems in Employing the Physically Handicapped. Fred H. Albee.

Illinois M. J. 83:251 (April) 1943.

The question remains the same: "Why should I hire half a man, if I can hire a whole man?" From an economic viewpoint, the employer should never hire half a man if he can get a whole man. The question is: What is a whole man?

A cripple who has been trained for a job is bringing not a half-man's work, but a whole-man's work to that particular job. Throughout the country, in every State, there are now rehabilitation departments, bureaus, or other agencies, whose main responsibility is to see that the cripple is prepared to fill some job in modern industry—not just any job, but a job for which his particular abilities, education and background fit him in as close to a tailor-made fashion as modern medicine, psychology and pedagogy can produce.

In addition, the cripple brings to a job a rare kind of loyalty—he appreciates being given a chance to prove he is not a social liability, but a self-respecting member of his community. He has a type of patience practically unknown among the able-bodied. If you had seen the years of pain and agony some of the rehabilitated cripples have endured that they might not spend their lives in bed or a wheel-chair, you would realize that the good old-fashioned guts required to rise above such suffering, gives the cripple a plus that makes his hiring one of the wisest personnel moves some employers ever make.

Thermal Burns. Stuart D. Gordon, and Roderick A. Gordon.

Canad. M. A. J. 48:302 (April) 1943.

Treatment in a bath of normal saline at con-

stant temperature, to which one gallon of warm saline per minute is added, was used in four cases. Three of these were received late, two on the fourth and one on the eighth day. They were badly infected, discharged profusely, and ordinary dressings were very painful. One of these patients had a burn involving 55 per cent of his body surface.

The usual routine has been one hour daily in the bath. If the burn is extensive, this may be followed by a severe reaction characterized by chills and a high fever. Where this has occurred a daily bath has not been given, but one every second or third day, depending on the patient's clinical condition. In the intervals the dressings are moistened with saline, but are not removed.

In this group the saline bath proved to be of definite value. It is difficult to imagine how else extensive and infected burns could be kept clean, both to the visual and olfactory senses, with as little discomfort to all concerned. We believe that the saline bath has a definite and important part in the treatment of extensive burns.

New Trends in the Treatment of Chronic Disease: An Experience in Spa Therapy. Walter S. McClellan.

Ann. Int. Med. 18:825 (May) 1943.

The author reaches the following conclusions: chronic disease in middle and old age is a serious medical problem in this country; lack of attention to matters of health in earlier years may be one contributing factor to the development of these chronic conditions in the older age groups; no magic drug or miraculous fountain of youth has been discovered for these conditions; much investigation in the field of geriatrics is under way and it is hoped that this will be productive of information which will aid in the regulation and control of these conditions; spa therapy can be utilized to advantage for selected patients with chronic ailments such as cardiovascular, rheumatic, gastrointestinal, metabolic, and skin disorders. It can be fitted into the physician's schedule for the chronic patient but he must know its indications and contraindications; the facilities available at the spas can also be used in the convalescent care required after acute illness or injury. Thus they have their place in the field of industrial and military medicine; in addition to the use of the natural agents which is the keystone of the program, rest, regulated exercise, diet control and proper recreation all have a part to play in producing the desired mental and physical relaxation; in order for the patient suffering from chronic disorders to derive the maximum benefit, it is necessary for the home physician to select the proper spa for his patient, taking into account the natural facilities available, the climatic factors and the availability of adequate medical control; long-term observation of groups of patients with chronic diseases, who have received treatment at spas will be required to determine finally how completely effective the program may be.

SCHOOLS APPROVED FOR TRAINING PHYSICAL THERAPY TECHNICIANS
By the Council on Medical Education and Hospitals of the American Medical Association *

Name and Location of School	Emergency Course				Regular Course			
	Director Medical	Months Duration	Classes Start	Tuition	Director Medical	Months Duration	Classes Start	Tuition
Children's Hospital, Los Angeles ¹	Steele F. Stewart, M.D.	a-b-c	6 Feb Aug	\$200 Certificate	12 Feb Aug	12 Jan July	\$200 Diploma	
College of Medical Evangelists, Los Angeles.....	Fred B. Moor, M.D.	a-b-c	.....	.....	12 Feb Aug	12 Jan July	\$200 Diploma	
University of California Hospital, San Francisco ¹	Frances Baker, M.D.	a-b-c	.....	.....	12 Feb Aug	12 Jan July	\$200 Certificate	
Stanford University, Stanford University, Calif. ¹	Wm. H. Northway, M.D.	a-b-d ²	7 Quart.	\$286 Certificate	10 Quart.	12 Feb	\$150 Certificate	
Walter Reed General Hospital, Washington, D. C.....	Capt. D. L. Rose, MC.	b	6 Quart.	None Certificate	.....	10 Quart.	\$401 Cert. or Degree	
Northwestern University Medical School, Chicago.....	John S. Coulter, M.D.	a-b-d	.....	.....	9 July Oct	9 July Oct	\$200 Certificate	
W. D. Paul, M.D.	b-c	6 HS	..... Given in conjunction with Harvard 3-4 yrs.	.....	.....	.....	.....
Arthur L. Watkins, M.D.	.....	.....	.....	.....	.....	.....	.....
Frank R. Ober, M.D.	a-b-c	6 June	\$200 Certificate	9 June	9 June	9 June	\$250 Certificate	
Boston University Sargent College of Physical Education, Cambridge, Mass.....	Louis Howard, M.D.	a-b-c	.....	.....	24 Jan Oct	435 yr. Cert. & Degree		
University of Minnesota, Minneapolis ¹	Miland E. Knapp, M.D.	a-b-c ³	.....	.....	12 Summer	1124 Certificate		
Mayo Clinic, Rochester, Minn. ¹	Frank H. Krusen, M.D.	a-b-c	6 Jan-July	None Certificate	9 JanJuly	9 Oct	None Certificate	
Barnes Hospital, St. Louis.....	Frank H. Ewerhardt, M.D.	a-b-c	.....	.....	9 Oct	200 Certificate		
St. Louis University School of Nursing, St. Louis ¹	Alexander J. Kotkis, M.D.	HS	.....	.....	4 yrs. JanSept	250 yr. Cert. or Degree		
University of Buffalo School of Nursing, Buffalo ¹	George G. Martin, M.D.	a-b-c	6 Feb Sept	\$420 Certificate	1-3 yrs. FebSept	350 Cert. or Degree		
Hospital for Special Surgery, New York City ¹	Kristian G. Hansson, M.D.	a-b-c	.....	.....	9 Sept	300 Diploma		
New York University, New York City ¹	William Bierman, M.D.	a-b-c	.....	.....	9 Feb Sept	396 Cert. & Degree		
Cleveland Clinic Foundation Hospital, Cleveland.....	Walter J. Zeiter, M.D.	a-b-c	.....	.....	9 Sept	None Certificate		
D. T. Watson School of Physiotherapy, Leetsdale, Pa. ¹	Jessie Wright, M.D.	a-b-c	.....	.....	12 July	200 Diploma		
Graduate Hosp. of the Univ. of Pa., Philadelphia ¹	Wm. T. Johnson, M.D.	a-b-c	.....	.....	12 Sept	200 Certificate		
Richmond Professional Institute, Richmond, Va. ¹	T. W. Wheeldon, M.D.	a-d ⁵	.....	.....	9-12 Sept	200-220 Certificate		
University of Wisconsin Medical School, Madison ¹	Ernest A. Pohle, M.D.	a-b	6 Feb Sept	\$964 Certificate	12 Sept	\$964 Certificate		

Note: Details will appear at a later date on the following approved courses:

State University of Iowa, Medical School, regular nine-month course. The following six-month emergency courses (approval extended for duration of the present emergency): Army and Navy General Hospital, Springfield, Mo. O'Reilly General Hospital, Denver. Fitzsimons General Hospital, Hot Springs National Park, Ark. Fitzsimons General Hospital, San Antonio, Texas.

* Courses are so arranged that any of the entrance requirements will qualify students for training. a = Graduation from accredited school of nursing; b = Graduation from accredited school of physical education; c = Two years of college with science courses; d = Three years of college with science courses; HS = High school graduation.

1. Male students are admitted.

2. High school graduates accepted for a four-year course leading to A.B. degree; students admitted quarterly and tuition is \$118 per quarter.

3. Medical technology graduate with B.S. degree also admitted.

4. Nonresidents charged additional fee.

5. Those with degree from other colleges also accepted.

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**MEETINGS OF PHYSICAL
THERAPY ORGANIZATIONS**

In these columns will be published information about meetings of physical therapy organizations. New data should be sent promptly to the office of the Secretary, 2 E. 88th St., New York 28, N. Y.

Southeastern and Southern Sections, American Congress of Physical Therapy will meet in conjunction with the *Section on Physical Therapy of the Southern Medical Association*, Netherland Plaza, Cincinnati, Ohio, November 18, 1943. Dr. E. J. C. Hildenbrand, 4201 Fessenden St., N. W., Washington, D. C., Chairman. (See announcement elsewhere this issue.)

New York Physical Therapy Society; meetings on first Wednesdays, from October to May, New York City; Dr. Madge C. L. McGuinness, 1211 Madison Avenue, New York, Secretary.

Connecticut Physical Therapy Society, meetings held in May and October at same time as the Connecticut State Medical Society. Dr. Karl Bretzfelder, 315 Whitney Avenue, New Haven, Conn., Secretary-Treasurer.

The Penna. Academy of Physical Medicine; meeting at the Phila. County Medical Building, 21st and Spruce Streets, Tuesday, October 19th. Future meetings, third Thursday, alternate months; Dr. Harold Lefkoe, 1824 Spruce Street, Philadelphia 3, Secretary-Treasurer.

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